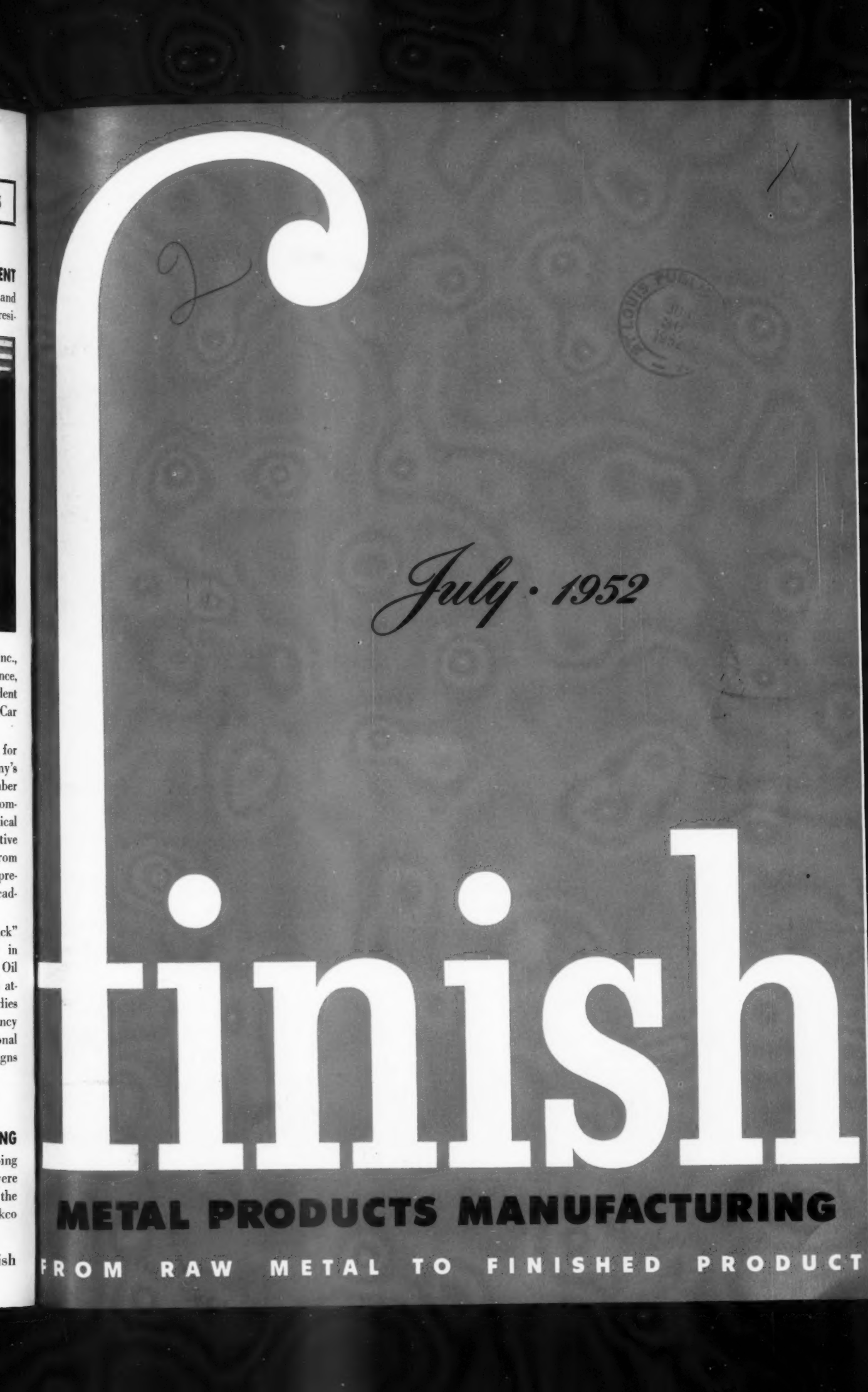

July · 1952
finish
METAL PRODUCTS MANUFACTURING
FROM RAW METAL TO FINISHED PRODUCT

KEEP CUSTOMERS

Satisfied with "CERAMIC" COLORS

To Meet Your ENAMEL NEEDS

- Color Oxides
- Screening Colors
- Smelter Color Compounds
- Printing, Graining, Stamping,
- Banding, and Decal Colors

Helping to Make a little Go a long Way

"Ceramic" is now devoting much of its effort to testing and processing procurable raw materials for conversion into usable products.

If you have a problem which our experience and specialized laboratory and testing equipment can help solve—please feel free to call upon us for cooperation.

We are eager to help get maximum productivity from available supplies . . . and to find new means of converting procurable materials into usable ceramic products.

KEEP CUSTOMERS SATISFIED WITH "CERAMIC" COLORS

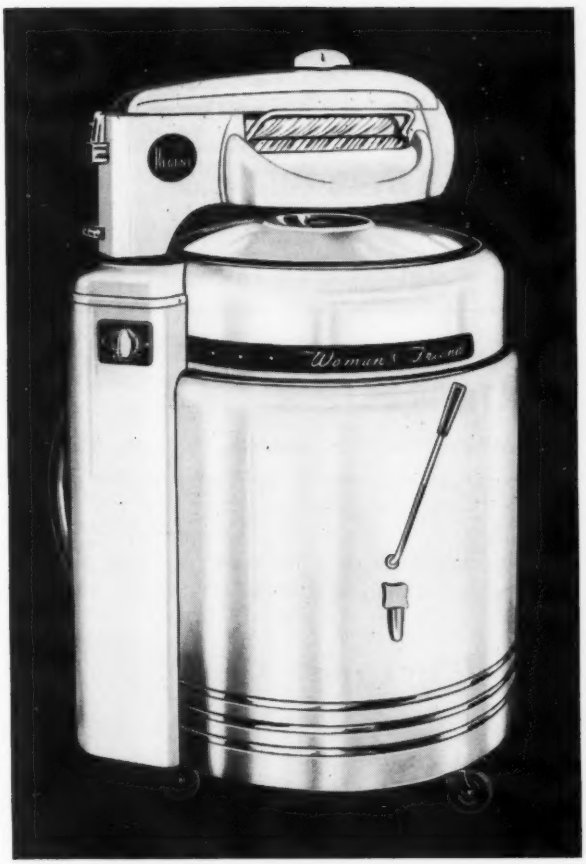
Your customers, like ours, may understand the difficulties you face in supplying all their requirements. And your customers, like ours, appreciate — and remember — the supplier who maintains high quality standards at a time when almost "anything goes."

"Ceramic" is doing two things to help its customers keep their customers satisfied: (1) Every effort is being made, and will continue to be made, to meet the requirements of those who have depended on us in the past. (2) We are maintaining pretesting procedures that assure high quality so that our customers get the most production possible from available supplies, and so what they produce is true-to-specification.

WEMMING CERAMIC COLORS TRADE MARK

CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U.S.A.

Photo courtesy Central Rubber and Steel Corporation, Findlay, Ohio.



New Washer Gets

LASTING ENAMEL ADHERENCE

The new "Woman's Friend" washer will keep its "showroom shine" through many and many a washday. Tub lid, wringer head, shroud, post shroud, and skirt all are formed from Republic Electro Paintlok and finished with a baked-on synthetic enamel.

Electro Paintlok is Republic's own zinc-coated sheet steel that's chemically-treated to *take* paints, lacquers and synthetic enamels readily and smoothly . . . and to *hold* them all equally well.

Its tight zinc coating stays tight and unbroken during all normal fabrication. It acts as an effective die lubricant too, giving you more production between grinds. And, it protects the finished product against underfilm corrosion where painted surfaces might become scratched or broken in use.

Electro Paintlok comes to you ready for painting. It usually requires only one simple cleaning to remove dirt acquired during storage and fabrication. Degreasing is necessary, however, when a drawing compound is used, or when grease or oil is present from other sources. Its full story is colorfully detailed in Republic booklet 525. Write for your free copy, today.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Dept.: Chrysler Building, New York 17, New York

REPUBLIC STEEL

Republic

ELECTRO ZINC PLATED SHEETS

Electro Paintlok · Electro Zincbond

Other Republic Products include Carbon, Alloy and Stainless Steels—Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire

AMERICAN CHEMICAL PAINT COMPANY

AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet

Subject: HOW TO MAKE PAINT STICK TO GALVANIZED IRON WITH LITHOFORM®

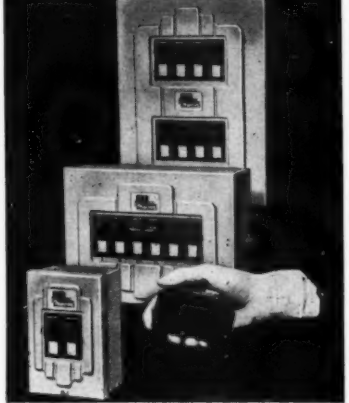
INTRODUCTION

"Lithoform" forms a dense, zinc phosphate coating on zinc, cadmium, and galvanized surfaces—including Galvanneal, cadmium plated steel, zinc plated steel, zinc base alloys, and zinc base die castings. The "Lithoform" coating, which is non-metallic and inactive, retards reaction between alkaline metal oxide and the paint film. Peeling and loss of adhesion are thus greatly retarded on painted Lithorized zinc and cadmium.

ADVANTAGES OF "LITHOFORM"

"Lithoform" forms a durable bond for paint. It is economical. It eliminates frequent repainting. It protects both the paint finish and the metal underneath. "Lithoform" meets these Government Finish Specifications:

QQ-P-416
RR-C-82
MIL-E-917A (Ships)
JAN-F-495
AN-F-20
U.S.N. Appendix 6



Photograph by courtesy of Murray Manufacturing Corp.

Murray Circuit Protectors are fully magnetic and provide maximum protection for both domestic and industrial wiring. Housings are of galvanized iron which is Spray Lithorized for long paint life.

THE LITHORIZING PROCESS

"Lithoform" can be applied by brushing or spraying the work with simple hand equipment, by dipping it in tanks, or by spraying it in industrial power washers.

Brush. Galvanized bay windows, cornices, rain gutters, hardware, building siding, truck panels, and farm equipment are typical of the many surfaces that are treated effectively with Brush "Lithoform".

Dip. This grade is used for coating cleaned surfaces of such typical products as cabinets, refrigeration condensers, etc., immersed in heated solutions in tanks.

Spray. The spray process is the most logical one with which to coat sheets, coiled strip or duplicate products best processed on a conveyor.

CHEMICALS ACP PROCESSES

WRITE FOR FURTHER INFORMATION ON "LITHOFORM" AND ON YOUR OWN METAL PROTECTION PROBLEMS.

CHEMICALS ACP PROCESSES

From the Editor's mail..

the "big squeeze"

Gentlemen:

We have received the May issue of *finish*, and are pleasantly surprised by the excellent treatment you have given the "*Big Squeeze*" story as a lead article.

This is an interesting issue and we are sending it to all our management and key production personnel. Our congratulations for this and the other references to ceramics which you have ably presented in this issue.

William P. Brotherton
Ryan Aeronautical Company
San Diego, California

ACS meeting coverage

Gentlemen:

Thanks very much for your letter of May 27 and the June issue of *finish* magazine. I think that your coverage of the American Ceramic Society annual meeting has been fine and very interesting. Thanks again for sending the June issue to me.

W. E. Cramer (ACS president)
Industrial Ceramic Products, Inc.
Columbus, Ohio

back volumes

Gentlemen:

This Institute is interested in the purchase of back volumes of your journal *finish* from the years 1944 to 1949. I am, therefore, to request you to kindly let us know if you can supply these to us, giving the prices of the available issues to enable us to place necessary orders with you.

The Director
Central Glass & Ceramic Research Institute
Ministry of Natural Resources and Scientific Research
Government of India,
Calcutta, India

the slump test

Gentlemen:

We will appreciate your forwarding to us a copy of the article "*The Slump Test*" by J. T. Irwin, published in the September 1946 issue of *finish*.

Kenneth Pinkerton
Purchasing Agent
The National Sanitary Co.
Salem, Ohio

THE finish LINE

ADS OUT

THE APPLIANCE INDUSTRY IS LATE— years late, with respect to sales training at the factory level, at the distributors' level, and at the retail selling level.

In *The Finish Line* for February, 1948, the statement was made " . . . if you do not already have a plan (*sales training program*) in operation, it's high time you give it some serious thought."

In the February, 1949, *Finish Line*, it was stated: "Most progressive manufacturers *have* been working hard during recent months to develop strong sales programs and charge the batteries of a sales force in preparation for the inevitable — a buyers' market.

"Although the average manufacturer's salesman is a bit rusty, and the young men have never experienced the necessity of 'selling,' the task of sales training and organization development is not in any sense insurmountable."

The real job is at the retail level

Quoting further from *The Finish Line*, February, 1949: "The task that will be very discouraging to many producers is that of getting their sales story to the ultimate buyer. All of the high powered selling and advertising in the world will never accomplish the desired result until the retail salesman and his boss are a part of the selling team.

"The 'little lady' at home almost fell in a faint the other day when a salesman actually came to the door to 'sell' an appliance. This was the one and only time since the war, however. You can bank on it the 'doorbell pushing' *will* come back if the country is to absorb the potential output of the product manufacturers. There may be some out-of-work men and many retail failures before strong retail selling returns, but it *must* return. The manufacturer will play an important role in shortening the time element."

(As this is written in June, 1952, there has been no single instance of a repetition of "doorbell pushing" at the home referred to.)

We were overly optimistic

It is disappointing to report that we were overly optimistic in feeling as early as February, 1948, that manufacturers of home appliances and other metal products *were* giving proper attention to sales training.

Facts that are developing now show that in far too many instances manufacturers have been willing to "go along" on the basis that consumer demand was sufficient to absorb the normal production capacities of their expanded manufacturing facilities.

NOW, four or five years late, these same manufacturers are frantically trying to get their sales organizations into shape so that there will again be an attempt made on the part of dealers and dealer-salesmen to actually *sell* the finished products instead of waiting for customers to come into the store and plead for merchandise.

This work is beginning late — very, very late — but it still has to be done, and those manufacturers who are not turning every possible bit of manpower and sales effort to the job of accomplishing constructive selling at the retail level may expect to be in a bad spot, indeed, for the months to come.

Doorbell pushing will be back

Those of us who were brought up on "doorbell pushing" salesmanship have long since dropped from the picture, and the younger salesman of today has no precedent to persuade him that this type of selling is a logical and important part of the appliance sales picture.

Our contention is now, as it was in 1948, that the only sure way of keeping the greatly expanded production facilities in the appliance and allied industries at profitable working capacity is to "get down to earth" and back to many of the selling fundamentals and selling plans that helped to build the multi-billion dollar appliance industry during its formative years.

All we can say now is that it's very, very late — but — better late than never. Let's get busy and keep these metal products moving into the customers' hands.

Dana Chase

EDITOR AND PUBLISHER

Need Conveyor Chain? **NOW**

We're In Position To Make

IMMEDIATE DELIVERY

X458 Drop-Forged

Rivetless CONVEYOR CHAIN

Improved production and material conditions have enabled Jervis B. Webb Company to stock an adequate supply of X458 Chain—ready for immediate delivery—to meet your conveyor system needs.

The No. X458 Drop-Forged Rivetless Chain for Trolley Conveyors (illustrated above) has the improved webbed side link which substantially stiffens it. Also, this type link prevents telescoping of the chain while in service. Simple and strong, it is cheaper and lighter per unit of ultimate strength than any other type of conveyor chain. It can be installed or removed by unskilled labor. Having no rivets, welds or bolts, X458 Chain requires no special or joining links and may be disconnected at any point, yet it is so designed that it cannot become disconnected while in service. No. X458 Chain is completely interchangeable with the Webb FIRST—the original No. 458 Chain designed in the early Twenties by Mr. Jervis B. Webb.

Send us your specifications and requirements. Prompt reply promised.

CONVEYOR ENGINEERS AND MANUFACTURERS

JERVIS B. WEBB COMPANY

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DETROIT 4, MICH.

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FACTORIES IN DETROIT . . . LOS ANGELES . . . HAMILTON, ONT.

MEETINGS

MATERIALS HANDLING MEETING

Materials handling industries, summer meeting, Mackinac Island, Michigan, June 29-July 2.

NAT'L HOUSEWARES EXHIBIT

National Housewares and Home Appliance Manufacturers Exhibits, Auditorium, Atlantic City, N. J., July 7-13.

HOME LAUNDRY MFRS. MEETING

American Home Laundry Manufacturers Association, summer meeting, Mackinac Island, Michigan, July 27-30.

PORCELAIN ENAMEL FORUM

Porcelain Enamel Institute, 14th annual shop practice forum, September 10-12, University of Illinois, Urbana, Illinois.

PMI ANNUAL MEETING

Pressed Metal Institute, annual meeting, Pocono Manor, Pennsylvania, September 14-18.

IRON, STEEL EXPOSITION

Association of Iron and Steel Engineers, 1952 iron and steel exposition, Public Auditorium, Cleveland, Sept. 30 - Oct. 3.

PACKAGING ENGRS. SHOW

Society of Industrial Packaging and Materials Handling Engineers, 7th annual exposition and concurrent short courses, Coliseum, Chicago, October 14-16.

NAT'L METAL EXPOSITION

National Metal Exposition, Philadelphia, Pennsylvania, October 20-24.

PEI ANNUAL MEETING

Porcelain Enamel Institute, annual meeting, The Greenbrier, White Sulphur Springs, W. Va., Oct. 22-24.

AGA MEETING, GAMA EXPOSITION

American Gas Association annual meeting, and Gas Appliance Manufacturers Association exposition, Atlantic City, October 27-30.

DETREX
PHOSPHATE
COATINGS

Your Paint Finish is on to stay!

...with Detrex PaintBond

Detrex PaintBond effectively retards corrosion and serves as an excellent base for paint finishes on metal surfaces. Easily and quickly applied by spray or immersion means, it will add years of life to your product's finish.

Detrex PaintBond is a zinc phosphate coating which chemically interlocks itself on the metal's surface. Thus the metal surface is sealed off from moisture and other causes of corrosion. Since this coating provides a fine-grained crystalline surface, it also serves as an ideal base for paint and locks it securely to the metal. If the paint finish is scratched, PaintBond retards corrosion . . . and even when the scratch penetrates the coating, any corrosion that takes place is confined to the scratched area only.

As manufacturers of PaintBond, metal cleaners, degreasing solvents, and the equipment, Detrex can supply the entire process required to meet government or individual specifications. Only Detrex provides this "start-through-finish" service. For more complete information, contact our local field offices, or write direct to **Detrex Corporation, Box 501, Detroit 32, Michigan.** P-1

DETREX CORPORATION

DEGREASERS • DEGREASING SOLVENTS • WASHERS
ALKALI & EMULSION CLEANERS • DRYCLEANING EQUIPMENT
PHOSPHATE COATING PROCESSES

SOLVING THE MILL PROBLEMS in

3-WAYS

1. HIGH DENSITY BALL FOR FAST GRINDING
2. HIGH DENSITY BRICK FOR LONG WEAR
3. THE ORIGINAL MILL HEAD ASSEMBLY
FRAME BRICK
DOOR BRICK
DOOR BRICK
FRAME BRICK

McDanel *New High Density* Hand Rolled Super Grinding Balls have been proven best by test.

Their performance has been checked in actual operations over a period of time and under varying conditions. In every instance they reduced grinding time, wore uniformly and lasted longer.

McDanel *New Super High Density* Lining Brick in routine production grinding in mills of various sizes show *two and a half times longer service* than conventional porcelain brick, thus greatly reducing the frequency of relining.

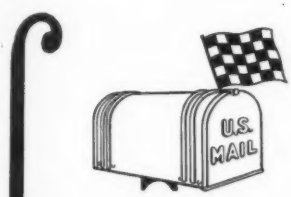
The McDanel patented Mill Head Assembly is permanent. After grinding is complete, a perforated discharge plug is inserted in place of the grinding plug, which permits quick, easy discharging.

It protects the mill charge from contamination through contact with the metal and prevents partially ground material from falling into the batch.

For full information contact your jobber or write us direct.

McDANEL Industrial PORCELAINS

McDANEL REFRACTORY PORCELAIN CO.
BEAVER FALLS, PENNA.



finish SUGGESTION BOX

New magnetic holder for the small shop or for pilot runs in production plants

a handy tool for small shops with limited precision equipment and for use on prototype production on defense contracts

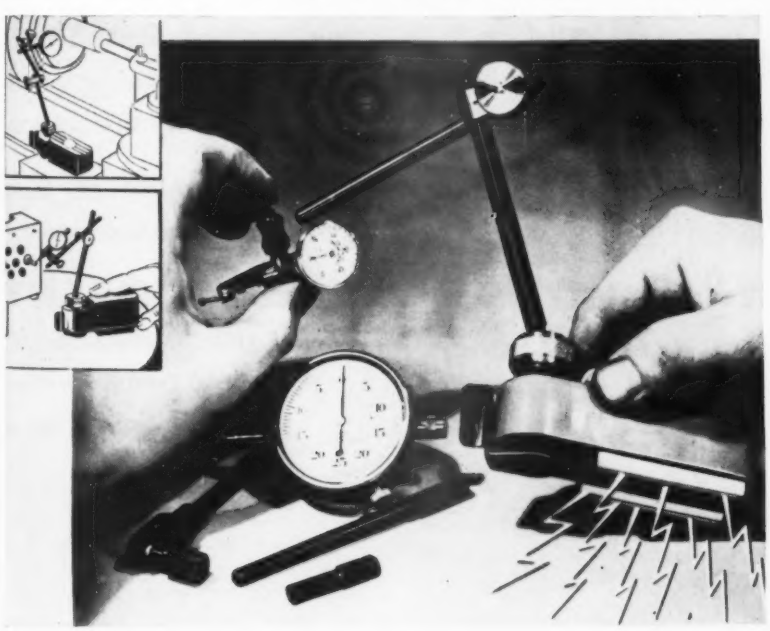
A NEW magnetic base holder for use in the small shop or for runs in production plants, and for small shops with limited precision equipment, has been developed.

This device makes it possible to direct enough light precisely where wanted while working on any machine shop equipment, along an assembly line. It is portable, flexible — an electric light unit — equipped with a permanent magnetic base for instantaneous attaching with a 50 lb. pull to flat or curved metal surfaces, thus improving the quality of workmanship, relieving the strain on workers' eyes, saving time and eliminating haphazard clamping, it is said.

This equipment consists of a magnetic base holder 1″ x 1-⅛″ . 1½″, (said to be the most powerful of its size produced commercially) to which is attached, by means of a ball stem, a bracket assembly having a socket clip. The socket clip holds an electric light socket to accommodate a 25 or 40-watt bulb which, together with the shield, has a length of 4-¾″.

The switch is on the light socket. The outside of the light shield is rayon flocked green to resist heat and protect the user's eyes. In fact, so cool does this shade remain that it may be used for adjusting the light. The socket and bracket assembly are heavily plated.

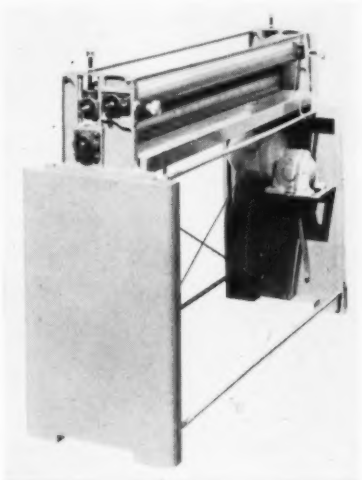
The unit comes equipped with 6 feet of plastic oil-resistant cord with plug-in for any 120 AC or DC outlet. The ball stem swivels in a knurled nut which, by finger tightening, maintains the bracket at the exact position wanted. The magnetic base is concave for mounting on rounded surfaces such as a shaft or pipe.



Source for more information on this new magnetic device may be obtained by writing to *finish*.

Versatile roller coater for metal products

A new universal roller coater, known as the Walco coater, is said



to be adaptable to a large variety of industrial coating operations.

It is particularly adaptable to the metal finishing trades for applying paints, lacquers, primers and oils to metal products, and drawing oil to sheet metal. The coating thickness is controlled by a "doctor" roll.

The unit is available in two types, a single coater, and a double-coater for coating one or two sides.

It is indicated that up to 35% can be saved on labor and material with the Walco coater. It coats up to 3800 linear feet per hour, or 15,000 square feet 48″ wide per hour. It is claimed to cover up to 850 square feet per gallon. The manufacturer says that in some instances labor savings up to 50% have been shown as compared with other methods of applying paint.

Further information on this roller coating unit may be obtained by writing to *finish*.

Cowles

HS

for longer life cleaning

HS is an anhydrous, silicated, heavy-duty soak and barrel cleaner of medium alkalinity. It is formulated to give maximum cleaner life with extraordinarily heavy soil loads. HS contains no soaps . . . is free rinsing and produces no undesirable scums on acid and rinse tank solutions. HS allows separation of the oil and removal of such oil from the detergent environment when an overflow principle is used. HS is particularly recommended wherever production specifications demand large amounts of oil removed from in-process parts. Write for complete information.

Prompt shipments from convenient warehouse stocks.

COWLES TECHNICAL SERVICE gladly furnished upon request

COWLES CHEMICAL COMPANY
METAL CLEANER DEPARTMENT
7016 Euclid Avenue
Cleveland 3, Ohio

Improving punch press production

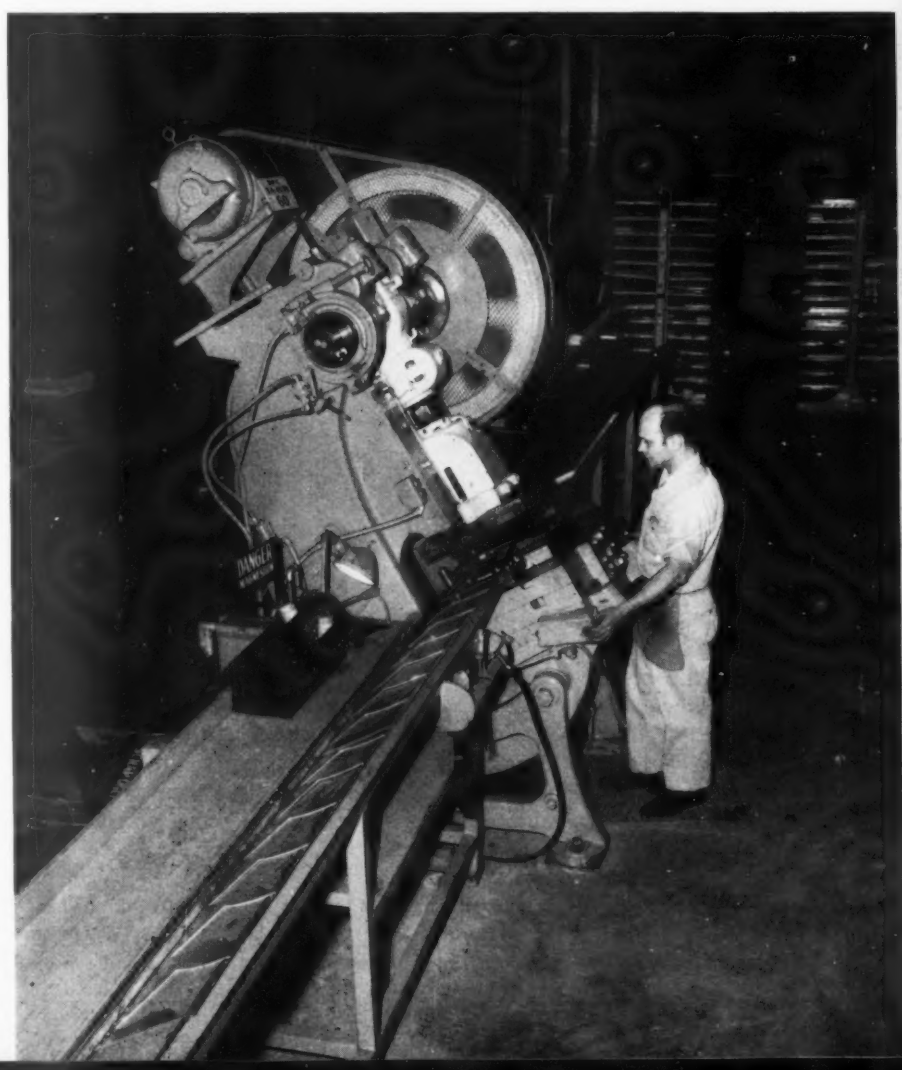
a striking example of how production can be stepped up in older departments

by Gilbert C. Close • WESTERN EDITOR

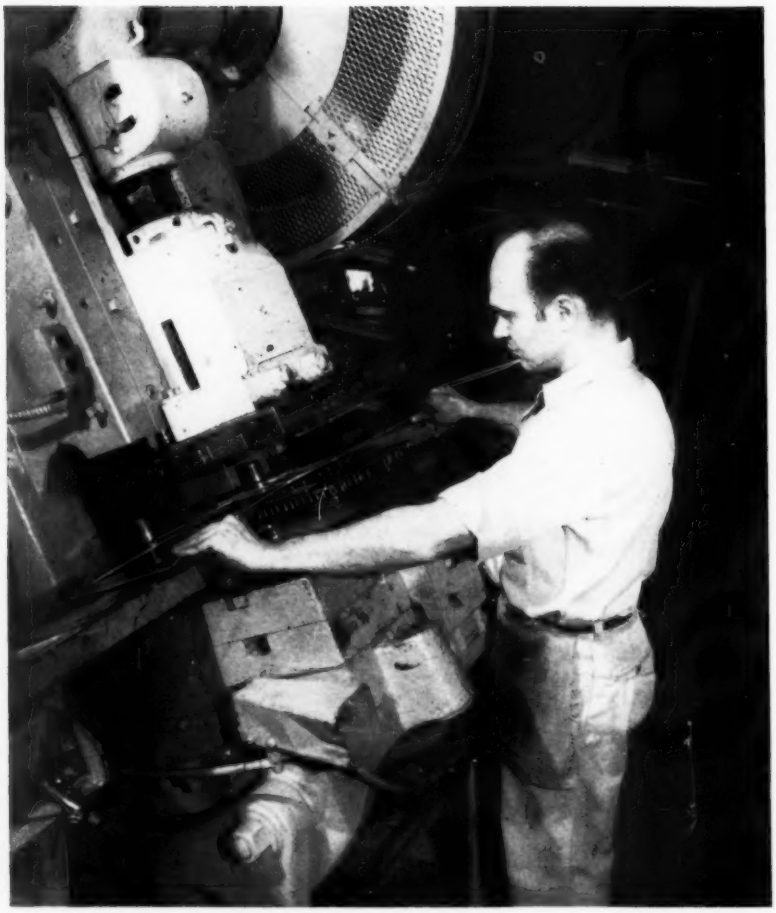
WITH a critical machine tool shortage hampering many facets of production throughout the nation, anything that can be done to increase the productive rate of tools already on hand is a direct offset to this serious disadvantage. In fact, rather than wait for new tools to become available, many plant engineering and tooling departments are attacking the problem from new and different angles. Shop surveys and studies are being made to determine just where such improvements can be accomplished. In general, the most fertile ground for such improvement lies in the older departments equipped with punch presses, drop hammers, and other types of standardized metal forming equipment. The newer specialized and automatic machines are less adaptable to modified production techniques.

A striking example of how production can be stepped up in an old and conventional department occurred recently in the shops at the El Segundo Division of Douglas Aircraft Company. In this plant, after much study and many consultations, action was taken to streamline production in the punch press department where parts were blanked for subsequent hydropress forming. As a result of this study and action, production in the department has been increased more than 50 per cent!

In the old set-up at Douglas, raw material used for blanking the parts was furnished in variable-width, 4-foot lengths sheared crosswise from conventional aluminum sheet stock. This material was stored in racks along one side of the punch press department. The hundreds of die templates used in punching the blanks were stored in other racks adjacent to the department. When the punch operator finished one production order, he had to shut down his machine while he removed the old dies, secured and installed a new set, secured the proper-width raw material, then blocked up his feed table



Right: View showing full-length adjustable-height feed and scrap strip receiving table on machine. Table height is adjustable by using a small wheel located convenient to operator's right hand. No "blocking up" is required to adjust table height to each set of dies installed.



Close-up showing quick-acting clamping device for installing upper die. Notice the handle just above operator's left hand. When thrown upward and back, this clamping device releases upper die from locating pins so it can be pulled forward and out. The new die is then slid into place, located over the locating pins, then handle is pulled forward and down.

in some manner so that the strip would feed straight and easily into the punch dies. During punching, he had to pause between each operation to remove the punched blank from the dies and place it in a receiving basket. The number of parts he could "run" from a 4-foot strip was limited, and he could hardly gain maximum cadence and speed in the punching operation before he had to stop and secure another strip. End waste on these 4-foot strips was considerable due to the number of strips used to complete the average production order.

In this old set-up, time studies showed that the average punch press was shut down approximately one-third of the time. A large percentage of this down time was due to the operator's utter dependence on himself in securing his own dies, his own raw material, and in adjusting the feed table of his machine to handle the new production order. He was further hampered by the shortness of the strip stock used, and by having to remove each punched blank from the machine dies before he could proceed to the next part.

Reducing machine downtime

The first order of accomplishment in the new set-up was to reduce this machine down-time, and to reduce scrap. After much study of the problem by the plant engineering division, under R. A. Myers, works manager, and by the sheet metal fabrication division itself, under J. A. Thrutchley, it was decided to reorganize departmental personnel and re-delegate responsibilities with the end view of providing each machine operator with a maximum of actual production time.

To accomplish this, one man was placed in charge of the die template storage racks, and another in charge of the raw material strip stock racks. To reduce scrap, each die set was coded to indicate the width of strip it should be used with to minimize waste. To reduce end waste (the amount of material left over after the last blank is punched from each strip), strip stock is now furnished in 12-foot lengths sheared lengthwise from 4 ft. by 12 ft. aluminum sheet stock.

Today, when a group of production orders enter the department, they go first to the man in charge of die template storage. This individual selects the proper die sets indicated by the orders and places them in a partitioned portable cart so that they can be wheeled directly to the punch press on which they will be used. The man in charge of strip stock material storage then takes the orders, selects the proper strip stock, and delivers it to waiting tables constructed just over the feed table on each machine. Thus when the punch operator finishes with one production order, both the dies and material needed for the next are ready and waiting at hand. He does not have to leave his machine for any reason.

The 12-foot strip lengths now furnished not only reduce end waste by two-thirds, but contribute to production speed. "A punch press operator does not reach his maximum cadence and speed until three or four punches have been made," Thrutchley says. "Thus, with the 12-foot strip, he maintains maximum speed for a longer time than was possible with the 4-foot strips."

To eliminate the time required to "block up" the raw material strips on the feed table so that they will feed straight into the machine, the plant engineering division designed and constructed new adjustable-height feed and receiving tables on each punch press. These tables are raised and lowered together by a simple wheel-type adjusting device convenient to the operator's right

hand. By spinning this wheel one way or the other, he can raise or lower the tables to adjust their height to each set of dies installed. This requires but a few seconds of time.

To further reduce changeover time, a new method for mounting the blanking dies in the punch presses has been worked out. The lower or female die is installed by locating it on guide pins in the punch press table. The Douglas methods development group, under Homer Snook, designed and installed on each machine a quick-action slide and lever-action lock to facilitate installation of the upper or male die. When this lever-action locking device is actuated upward and backward, angle iron guides drop down from the upper die plate to release the upper die from its locating pins so that it can be easily slipped out just like opening a desk drawer. The new die is then inserted in the angle iron guides, positioned on the locating pins, then the locking lever is pulled forward and down. This clamps the angle iron guides upward and holds the die firmly in place. Less than a minute is required to make a complete die change. The removed dies are then placed in return racks from which they are picked up by the man in charge of die storage and returned to storage.

In the old set-up, the punch presses were used in an upright and level position. As already pointed out, this required the operator to pause after each punch and remove the blank from the dies. Now, each punch press is tilted backwards at a sharp angle. This produces enough table slant so that punched blanks feed by gravity from between the dies backwards into a receiving box located at the rear of each machine. Seldom does the operator have to pause to remove a "stuck" blank by hand.

Automatic counters for presses

Another innovation was installation of an automatic counter on each punch press. Formerly each operator had to keep track of the number of blanks punched so that he would not exceed, or short, production order requirements. The counter relieves him on this mentally tiring duty.

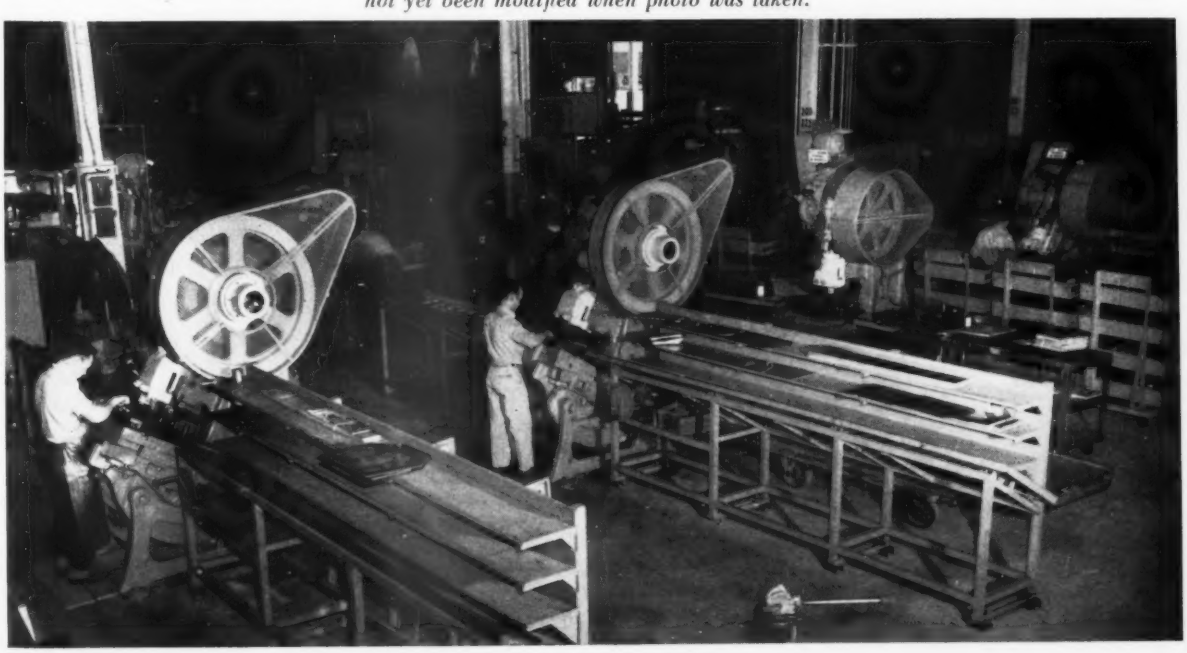
Due to the huge number of blanking dies used in airframe construction, Douglas tooling engineers have worked out a method of economical and speedy die production. The upper or male die is made of cold rolled steel, accurately machined to required dimensions. The lower or female die is made of Kirksite. The opening in the female die is first roughly routed out undersize, then broached through with the upper die to provide a perfect fit. The Kirksite female die provides another advantage. Due to the inherent softness of the Kirksite alloy, there is just enough metal flow during each punch operation to force the Kirksite inward against the steel male die. This results in a self-sharpening action, and maintains each die set in optimum blanking condition.

While seemingly simple in its final form, this renovation of the punch press department required a lot of time and study. It meant radical departures from old and established production techniques practiced on old and conventional equipment. But the results of the Douglas efforts proved quite conclusively that there is always a "better" way to do something.

Punch press output up 45%

"Under the old set-up, our punch press operators averaged about 2400 punched blanks during an eight-hour shift," Thrutchley says. "Under the new system, each man produces about 3500 blanks during the same period."

View showing the material storage shelves constructed above the feed table on each machine. Raw material strips of the proper width and in the proper amount is ready at hand for the next production order. Operator has only to slip the strip from the shelves down onto the adjustable-height feed table. Note that one press had not yet been modified when photo was taken.



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ADS OUT

Testing for enamel coating discontinuities

including a description of inspection methods by instrumental means

by Stanley C. Orr • ASSISTANT FACTORY MANAGER, THE PFAUDLER COMPANY, ELYRIA, OHIO

INSPECTION of finished enameled ware for the presence of coating discontinuities is practiced in some form at practically every enamelware manufacturing plant. However, literature references to the methods employed are scarce and of limited scope.

Each plant must select the method most appropriate to its own products and problems. For example: defects that may be located only through the use of a high voltage tester would have no significance to the producer of enameled stove liners. Conversely: strict reliance upon visual inspection alone would lead to disastrous field failures of heavy duty glass-lined chemical equipment.

Fortunately, a variety of tests is available that will permit the detection of minute imperfections where inspection standards are necessarily rigid without grossly penalizing the manufacturer whose products are tolerant of small defects.

Visual inspection

The universal means of locating enamel discontinuities is by visual inspection. It is entirely adequate for perhaps ninety per cent of all enamelware produced and requires only a conscientious inspector, good lighting and suitable handling equipment.

Its obvious advantages are speed, economy and adequacy. In many industries, it lends itself well to combination with other duties such as packing or assembly. It is ideally suited where product appearance is of prime importance, and where risk of service corrosion is negligible.

Since visual inspection procedures are already well established wherever required, it is unnecessary here to dwell upon them. The intent of this article is to describe instrumental means of location of defects that are not readily apparent to the eye and which, if undetected, would lead to field failures, costly service or replacement and loss of confidence in the integrity of the manufacturer by his customer.

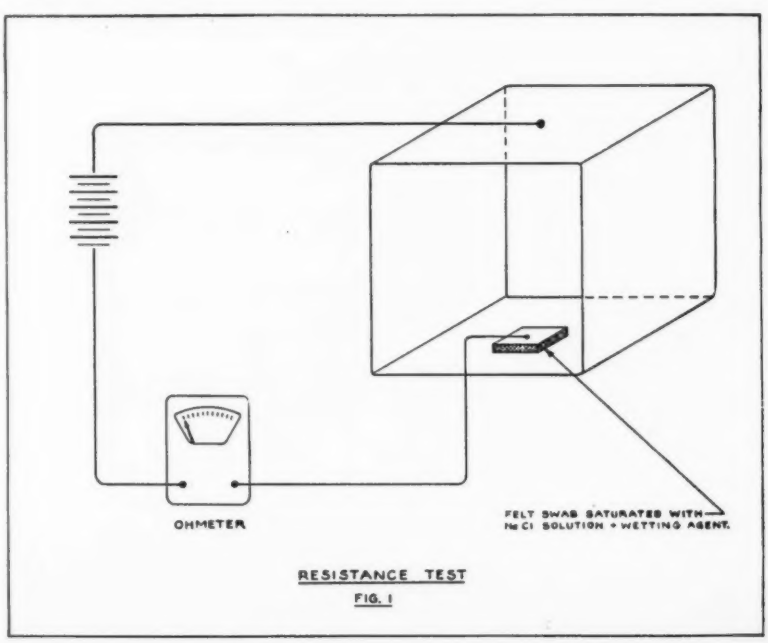
In general, these tests are based upon the fact that a continuous enamel layer possesses excellent electrical insulating properties. It is characterized, as are all insulators, by high resistance to current flow and by high dielectric strength.

The resistance test

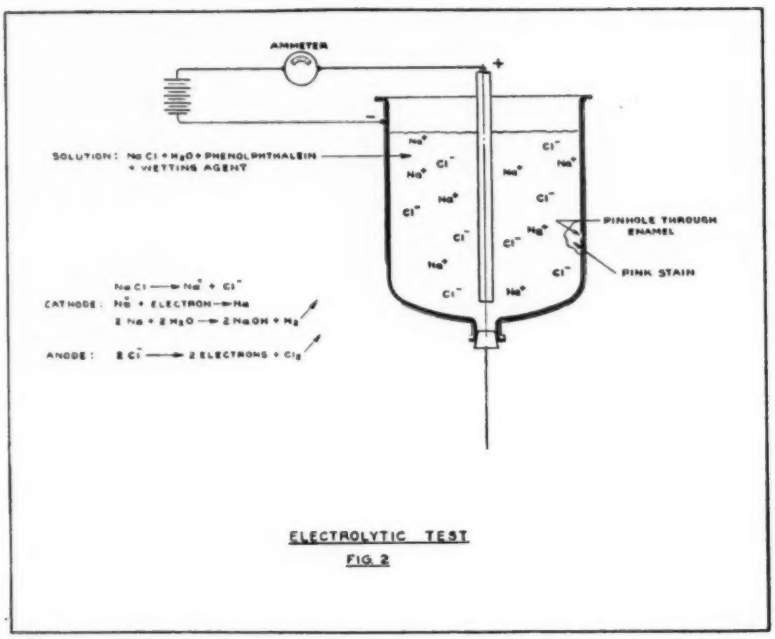
A simple electrical test for enamel coating discontinuities employs an ohmeter with a self-contained or external low voltage source. One lead from the ohmeter is connected to bare steel on the outside of the article to be tested. To the other lead is attached a felt pad saturated with brine to which a small amount of wetting agent may be added to act as a penetrant. The enamel surface is then swabbed with the felt pad while the operator watches the ohmeter dial for resistance changes. This is schematically illustrated in Figure 1.

Since a sound enamel coating has virtually infinite electrical resistance, no current flow occurs until the salt solution comes in contact with the bare steel through a pinhole or crack. Then an electrical circuit is established and the ohmeter registers a dead short or a pronounced drop in resistance. Close visual examination and experimental probing with the sponge will locate the defect with precise accuracy.

Care must be used to prevent the



RESISTANCE TEST
FIG. 1


AMMETER
SOLUTION: NaCl + H2O + PHENOLPHTHALEIN + WETTING AGENT
PINHOLE THROUGH ENAMEL
PINK STAIN
CATHODE: Na+ + ELECTRON → Na
2 Na + 2 H2O → 2 NaOH + H2
ANODE: 2 Cl- → 2 ELECTRONS + Cl2

ELECTROLYTIC TEST
FIG. 2

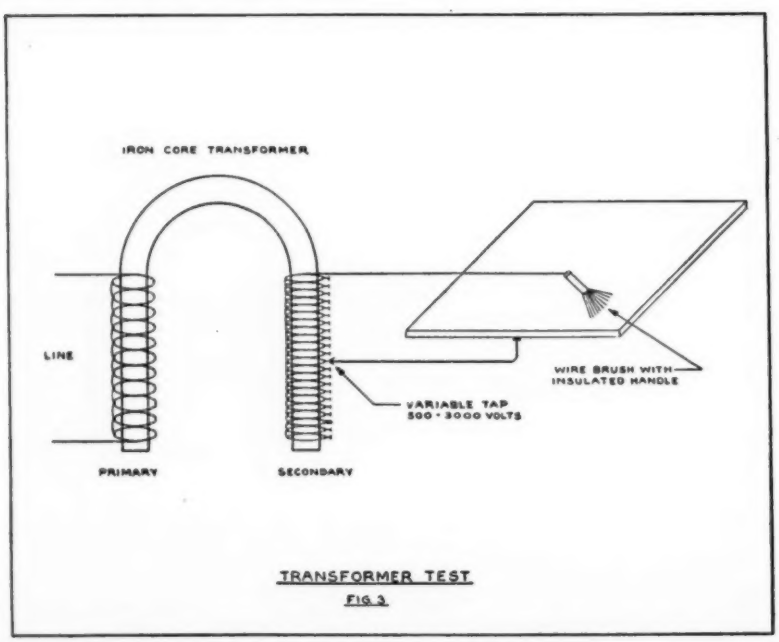
brine solution from creeping over the edge of the ware and setting up a false circuit.

The equipment is relatively inexpensive and can be adapted readily to production line testing. There is no hazard either to the operator or the ware since very low voltages are employed.

The resistance test is exceedingly sensitive where enamel coating defects extend through to the steel, thus creating a potential corrosion hazard. It is widely used in routine production testing of enameled hot water tanks, high humidity refrigerator liners, glass-lined brewery and dairy equipment, and in field inspection of glass lined chemical equipment.

The electrolytic test

The electrolytic test, or brine test as it is sometimes designated, is equivalent in sensitivity to the resistance test and is widely used in Europe for the inspection of glass-lined chemical and pharmaceutical processing vessels.



TRANSFORMER TEST
FIG. 3

The voltage source is generally a 90 volt "B" battery and the instrument a milleammeter. The vessel to be tested is filled with a brine and wetting agent solution to which has been added a few c. c. of phenolphthalein to act as an indicator. The bare steel exterior of the vessel under test is made the cathode of the circuit while a large area anode is suspended in the brine solution. Figure 2 illustrates the hook-up and the chemical reactions involved.

The sodium chloride in solution dissociates into sodium ions bearing a positive charge and to negatively charged chloride ions. Since unlike charges are attracted to each other, any exposed steel, such as would exist at the bottom of an open pinhole or crack, will attract the sodium ions. A current flow would be indicated by the ammeter.

Upon coming into contact with the electron source (in this case, the cathodic steel shell), the sodium ions are neutralized to sodium atoms which react immediately with the water forming sodium hydroxide while hydrogen is evolved. The sodium hydroxide thus formed renders the solution at the point of contact alkaline, causing the phenolphthalein to turn pink, permitting accurate location by the inspector of the site of the defect.

While we are not concerned with the reactions occurring at the anode in the inspection of enameled equipment, we can follow them through to tie up the loose ends.

The negatively charged chloride ions are attracted to the anode where they surrender their electrons and become chlorine atoms. These coalesce forming minute quantities of molecular chlorine which evolve from the solution. Thus it can be seen that this brine test essentially simulates the familiar chlorine cell for the electrolytic production of chlorine gas.

The electrolytic test may be modified to adapt it to irregularly shaped ware and to make it more convenient for the inspection of large vessels. In this variation, the enamel surface is swabbed with a brine-phenolphthalein-detergent solution until a continuous, or nearly so, film of the

solution is established over the enamel. Again, the bare steel is made the cathode of the system but the anode is connected through a flexible lead to a felt pad saturated with the electrolyte.

The wet enamel surface is then sponged with the felt pad. The occurrence of pink spots in the brine film as the swab approaches indicates the presence and location of exposed steel.

While the electrolytic test is generally too cumbersome for assembly line inspection methods, its sensitivity recommends it highly where critical inspection of large areas is required. Thus it is excellently suited for glass-lined chemical equipment, both at the manufacturer's plant and for field testing in chemical plants where the necessary equipment and supplies are generally readily available.

The transformer test

The transformer test set-up is shown schematically in Figure 3. It consists of a variable tap transformer with one lead from the secondary clipped to a bare steel area of the article under inspection and the other lead attached through an insulated handle to a wire brush. The procedure is to select an appropriate voltage tap, and then simply brush the enameled surface while watching for arcs from the wire brush.

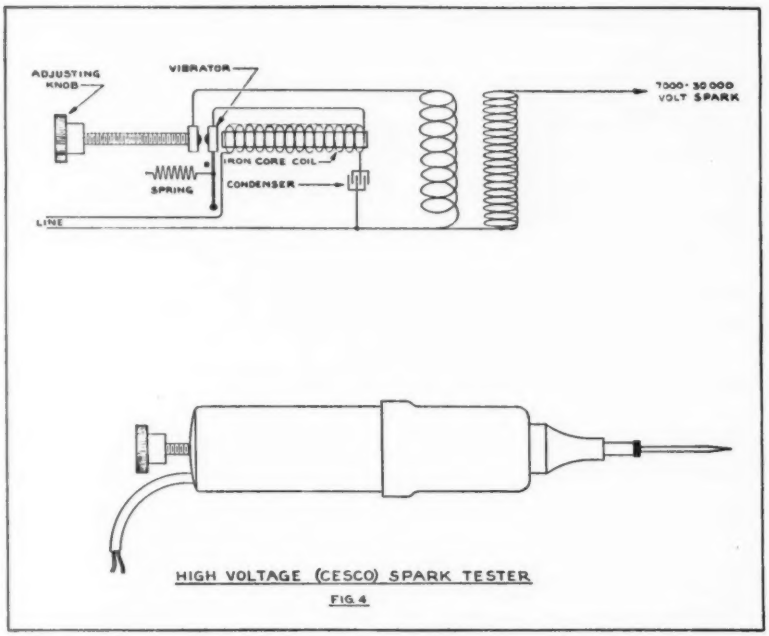
While this test is much more convenient than either of those described earlier, it has two rather serious limitations. First, the amperages delivered constitute a pronounced physical hazard to the operator. He must wear electrical type rubber gloves and either be rubber shod or stand on a dry rubber pad.

Secondly, when bare steel is detected by the arc, the current flow may enlarge the defect by melting or oxidizing the steel. Repairs are thus made more difficult.

Both of these objections are answered to a large extent by employing a limiting current type of transformer, but even with this it is important to take all sensible safety precautions.

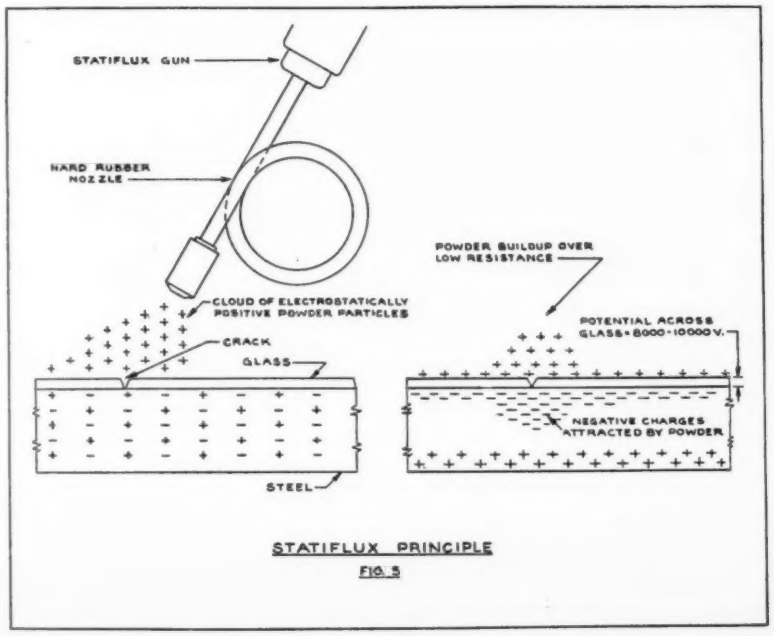
While I know of no standard catalog item transformer that is suitable for this test, there are a number of manufacturers who will wind custom transformers to the purchasers' specifications. One suitable type is variable in small increments between 600 and 3000 volts. Built into the case is a voltmeter to indicate the desired setting and a signal light that flashes when the circuit is completed through a defect.

There is an apparent anomaly in the transformer test, for, in spite of the much higher voltages employed, it may not be as sensitive as the low voltage resistance or electrolytic tests. This may be understood from the fact that a potential of 2500 volts will throw a spark in dry air for a distance less than 0.040". Thus a ware filament from the test brush must pass within this distance of bare steel to indicate the defect. At lower voltages the spark gap is even shorter and the sensitivity of the test is correspondingly lower. With wet test methods, such as the resistance and electrolytic tests, however, the brine-wetting agent solution constitutes a conductor



HIGH VOLTAGE (CESCO) SPARK TESTER

FIG. 4



STATIFLUX PRINCIPLE

FIG. 5

which penetrates to the bottom of the defect making the test exceedingly searching.

The high voltage test

While the three tests just described are concerned primarily with the detection of resistance leaks through the enamel layer, the high voltage tester takes account of the dielectric strength of the glass as well. This property may be simply defined as the strength against physical breakdown when high voltage stresses are applied.

The instrument used to perform this test is known as the Cesco high frequency tester. A simplified schematic wiring diagram is shown in Figure 4. It consists of a modified Tesla coil, a magnetic circuit breaker and an adjusting screw to vary the frequency of circuit interruptions, all contained in a moulded plastic case about the size of a flashlight.

It is widely used today to test not only enamel linings but rubber and plastic linings as well.

Since its discharge current is only of the order of one-half a milleampere, there is no danger to the operator in its use. The output voltage is variable within the limits of approximately 7000 to 30,000 volts.

The tester is, perhaps, the ultimate in convenience in testing enamel linings for freedom from discontinuities. Furthermore, it is almost infallible in its sensitivity toward pinholes. It is necessary merely to plug it in to a 110 volt ac or dc line, adjust the vibrator regulator and lightly brush the enamel surfaces. Its characteristic pale blue or violet corona discharge changes sharply to a thin white spark when brought within an inch of a pinhole through the glass, and the hole is located with extreme accuracy.

Unfortunately, in spite of its many advantages, the tester has one serious drawback to its use in testing glass-lined equipment. Its output voltage is so high that, unless used with extreme discretion, it will not only detect pinholes but actually create them by exceeding the dielectric strength of the glass layer and puncturing it.

The dielectric strength of glass has been reported in various handbooks at as low as 200 volts per mil and as high as 4000 volts per mil. These wide disparities are apparently due to variations in the methods of test and the types of glasses. A reasonable figure for the dielectric strength of glasses applied to steel when exposed to the tester is about 2000 volts per mil. On this basis a Cesco tester delivering 30,000 volts would puncture sound enamel less than 15 mils in thickness. Since this is within the range to which commercial enamels are generally applied, the hazards of indiscriminate use of this tester are obvious.

The risk of dielectric breakdown of enamels by the Cesco tester can be minimized by adjusting the output voltage downward to a predetermined safe limit that will find pinholes but not cause them. The use of a variable spark gap and a table of spark gap voltages are necessary to accomplish this adjustment.

It is important to keep in mind also that, in addition to high voltages, duration of testing and repetition of testing may accelerate dielectric breakdown. Thus very slow or frequent use of the high frequency tester may result in damage to the glass lining.

The electrostatic test

An interesting application of electrostatically charged powdered particles to the testing of enamel coatings was developed five years ago and its use is licensed under the name Statiflux. This principle is illustrated in Figure 5.

A specially prepared grade of fine calcium carbonate powder is blown through a hard rubber tube. During passage through the tube, some of the electrons are rubbed off the powder particles, thus giving them a positive charge. This positively charged powder, when blown on an enameled surface, attracts the free electrons in the metal backing to the underside of the enamel layer, leaving a surplus of positive charges at the metal surface

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"I TOLD YOU TO WORD THAT AD *ENAMEL* STRIPPERS"

ADS OUT——

Synthetic resins for industrial finishes

Part III — systems containing no drying oil or alkyd

by William von Fischer • HEAD, DEPARTMENT OF CHEMISTRY AND CHEMICAL ENGINEERING
CASE INSTITUTE OF TECHNOLOGY, CLEVELAND, OHIO

FROM the viewpoint of ease of making and applying a paint, the use of alkyds has simplified many practical problems of industrial finishes so much that it is easy to understand why their use has been so general, and why industry is reluctant to abandon these in designing other industrial finishes.

By blending a chemical modification with other resins, alkyd base materials can be used to accomplish the widest variety of practical paint specifications. Situations do arise, however, where the presence in a coating of even small proportions of alkyd or vegetable oil results in a non-allowable sacrifice of chemical resistance of the finish. In such instances, there is no recourse except to resort to synthetic resin finishes which contain very little or no saponifiable matter. With few exceptions this expedient is very costly and requires some sacrifice in design for decorative properties. The quantity of non-alkyd types of industrial finishes is presently very small; however, where rigid specifications for enhanced corrosion protection prevail, there is an increasing trend toward the use of these newer finishes.

Briefly, we shall review some of the principal classes of such finishes.

CURING (THERMOSETTING TYPES)

Phenoplasts

These resins are derived from the condensation of aldehydes, principally formaldehyde, and sometimes furfural *with* hydroxy aromatic compounds such as phenol, resorcinol, cresol, bis-phenol A, etc. Many resins of this class are used as molding and laminating compounds in the plastics industry and others are used as varnish resins — that is, they are dispersed in oil in the varnish making industry. Some resins of this class are not combined with varnish oils, and can be applied directly to metals from solvent solutions and then can be cured to insoluble and highly resistant films by baking. Most of these types of resins give quite brittle films and have to be plasticized by blending with a reactive type of vinyl resin, particularly polyvinylbutyral. In their unpigmented form, such finishes have been used for years as container coatings in the food packaging industry. Many attempts have been made to extend the use of these resins to the general field of production finishes where pigmented or colored coatings are required.

These ventures have been only partly successful for the following reasons:

(a) Exceptional care is required to maintain high standards of surface preparation and surface cleanliness. Otherwise, the coatings crawl, pinhole, fish-eye or other breaks in continuity may show at which protection is lost or at best the film looks unsightly. This can be controlled partly by care in choice of thinners, careful spraying techniques, dust control and by other non-ordinary precautions in the paint shop. Ordinarily, the better the quality of the resin, the greater have been these special problems of paint application.

(b) For the better resins of this class, if maximum chemical resistance is required, multiple coat application is recommended. This does not mean a number of spray coats and one baking operation, but rather a baking operation for each individual coat. If the preceding coat is undercured, the advantages of multiple coat baking are partly lost; if an undercoat is overcured, the next coat of even the same resin may not adhere too well to the preceding coat. This involves a rather delicate control of baking schedules. For example, if a three-coat system is applied, the first two coats are baked for 4 - 6 minutes at a temperature of 440-490° F., and the finished three-coat system is then baked for 20 - 60 minutes at the same temperature. The baking temperature can be reduced by extending the baking time or by using curing catalysts; however, some protective properties are then sacrificed. Determination of the optimum schedule is very important. If everything is done just right, such finishes provide nearly the ultimate in protective properties where the surface will be exposed at moderate temperatures even to very concentrated solutions of acids, alkali and a variety of organic chemicals.

(c) While much has been done recently to improve the decorative properties, even now it is difficult to compete with alkyd-melamine finishes as far as appearance is concerned. The phenolic resins tend to discolor during the baking of the film and they yellow even more as the film ages in service. The luster that can be obtained is usually not much greater than egg-shell or semi-gloss.

Considering all of these difficulties,

it would seem that the phenoplasts would have only limited use in production finishes. This is not necessarily true for the following reasons: (1) Research shows promise of new resin finishes of this class that are easier to apply and more color-stable. (2) For finishing the light metals, notably magnesium and aluminum, with a very protective film, there seem to exist very few competitors to this class of finish. These phenolic, or phenolic-vinyl, or phenolic-melamine blends set a standard of quality for protection of these metals which has been as yet unsurpassed by any other organic coating that has been applied on a production scale.

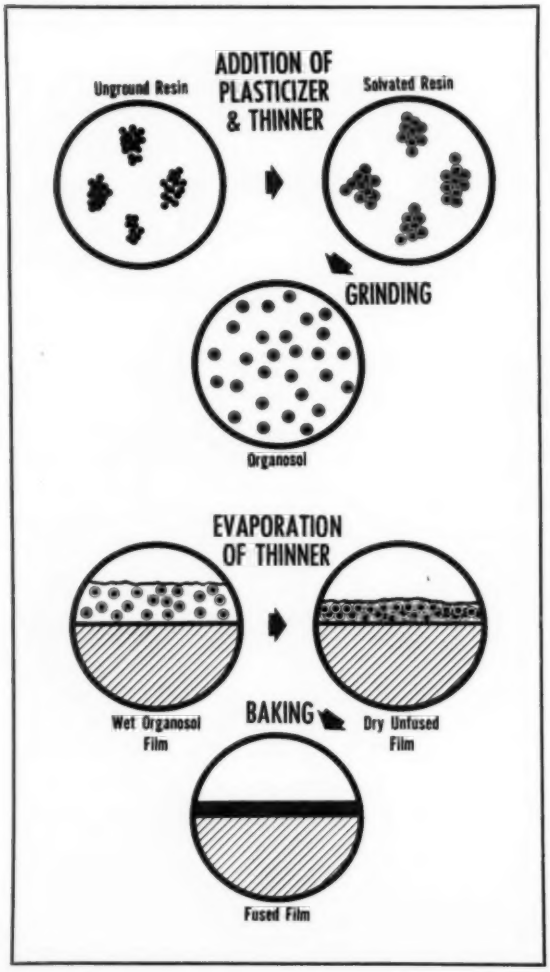
Epichlorohydrin resins

Potentially, this is a type of resin that can be made from a great variety of chemicals. The commercial resins have been built from phenolic compounds (especially bis-phenol A) and epichlorohydrin. They now occur under a variety of trade names such as epon (Shell); epitex (Devoe-Reynolds) and araldite (Ciba), and under special non-generic or non-class names (for example, Carbide and Carbon Stabilizer A-5). This class of resins is available in two useful forms:

(a) The air-drying type — wherein the base resin is modified with drying oils. The epichlorohydrin resin part of the composition greatly enhances the adherence and chemical resistance so that these resins outclass the oil-modified alkyds for protective properties.

(b) The non-drying type — these can be modified to some extent with a non-drying oil. To produce a good film, the finish must be baked at temperatures exceeding 375° F. The baking temperatures can be lowered, with some sacrifice in protective properties if the resin is blended with urea or melamine resins or if special curing catalysts are used.

With respect to decorative properties, these finishes are better (less of a yellowing tendency and they are more flexible and higher in gloss) than the phenolic types which we have discussed. They seem to be about equal to the phenolics as protective films. Color retention, however, is not as good as for the better alkyd-melamine types of white enamel. The practical problems of application are somewhat similar to those noted for the phenolics, but possibly they are not quite as severe. More so than with phenolics, there is some possibility for blending with other resins so as to minimize application problems and to improve appearance. In general, however, as these features are accomplished, something is lost as far as protective properties are concerned. However, even when extensively modified, the protective properties of epichlorohydrin resin films are still better than those obtained with the traditional alkyd-melamine enamels. There is no doubt that epichlorohydrin resins will be used in increasingly greater quantities in future industrial finishes.



Schematic illustration of the principle of preparing organosol coatings and the technique of applying thermoplastic coating films. Here resins are used which are insoluble and film formation is completed by fusing or sintering the deposited film of powder.

Allyl resins or polyester resins

Potentially, these types of resins can provide very good protective films (similar to phenolics or epichlorohydrin resins) and they have decorative properties equal to the alkyd-melamine types. A great deal of research has been done in trying to adapt these resins to industrial finishes. This class of resins has found a useful field in plastics molding, and, consequently, active research in these types of resins is still in progress. While it is not a current possibility, no doubt in time some new resins of this family will be developed which will be interesting to the designers of industrial finishes. The resins which have been tried in the past have had several defects such as inferior adhesion, poor application properties, some tendency for brittleness, and high costs. All of these defects may be brought under control some day. If so, finishes might be produced which will have both the

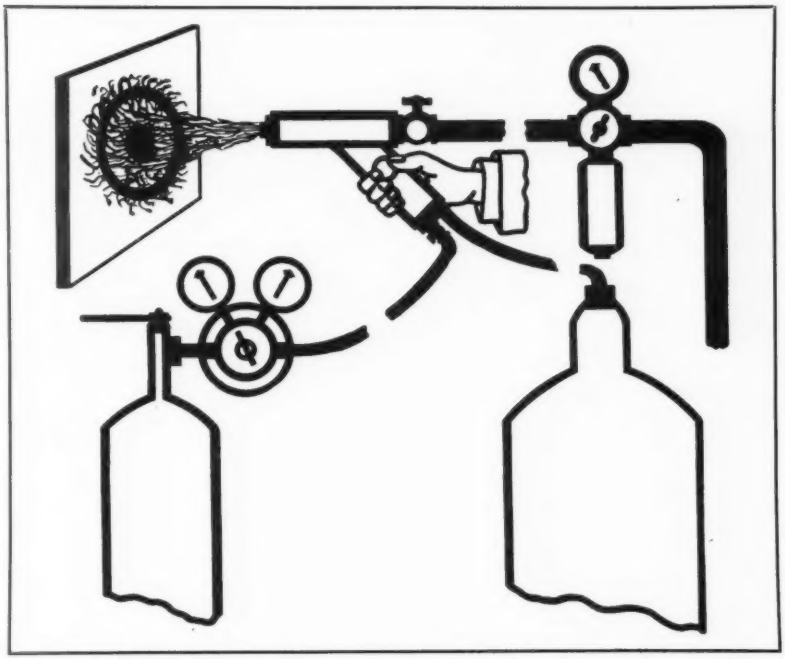
ultimate of protective and decorative properties in one type of finish.

Silicone resins

All that has been said of the silicone alkyds in the earlier part of this discussion applies also to the unmodified silicones. Except for some weakness against solvent attack, baked silicone finishes provide nearly the ultimate durability with respect to withstanding high temperatures, weathering and exposure, to a great variety of corrosive environments. The better the silicone finish, the more drastic is the required baking schedule. The most desirable finishes might require several hours of baking at temperatures exceeding 400°F. in order to develop optimum film properties. The straight silicones are more difficult to formulate into useful paints and do not have quite the luster of the less durable silicone-alkyds. These difficulties, however, are not unsurmountable, and silicone resin enamels would be used more if they were not at least ten times as costly as other finishes which possess most, even though not all, of the excellent properties of the silicones.

Aminoplast resins

To most people, this means urea or melamine resins, although a great variety of resin compositions of this class is possible without using specifically the chemicals called urea or melamine. Up to the present time, no coatings resins of this type are used extensively which can do without the beneficial effects of alkyd blending. If resins could be produced which have flexibility and which do not require plasticization by alkyds, epons, etc., it should be possible to produce high luster, color retentive films of chemical resistance approaching and possibly surpassing the phenolics. This has been the ideal of resin research for some time. However, as of this writing, such finishes have not appeared as a definite commercial possibility. The application properties and decorative properties of these resins is nearly equal to the straight alkyds and is far superior to the phenolic resins. At this time, while aminoplasts are among our most important coatings resins, ordinarily they can be used only as the lesser part of mixtures with other resins.



Schematic representation of the type of apparatus used to apply insoluble and high melting point thermoplastic resins by flame spraying. Special feeder tank on the right provides a smooth stream of air-plastic powder mixture to a special gun. The plastic is melted on passing through annual ring of flame at gun nozzle and "freezes" after being deposited on the target surface.

NON-CURING (THERMOPLASTIC) TYPES

Loosely, these resin systems might be called lacquers since the film forms by solvent evaporation. However, except for the cellulosic lacquers and rubber resins, a baking operation is necessary in order to fuse the film so that it will develop adherence, toughness and luster.

Cellulose derivatives

The most used cellulose ester is nitrocellulose which has been considered as a complementary resin to alkyds. Ethyl cellulose, cellulose acetate, cellulose acetate butyrate are other cellulosic lacquer resins which have some use in industrial finishes. The use of these other cellulose esters is really more common in plastics molding than in coatings. Ethyl cellulose finds special uses in the coatings field such as in lacquers for cloth-wrapped, high-tension cables, and, sometimes, in combination with melamine resins and plasticizers, it is used in baking lacquers. These baking lacquers provide a rather pleasing decorative finish which can be used over undercoats of phenolic resins. Such systems have found occasional use as production coatings where both decorative properties and excellent alkali resistance are required. These same objectives can be obtained with the epichlorohydrin resins with less trouble and at a lower cost.

Synthetic rubber and natural rubber derivatives

There are a considerable number of these materials used in coatings. For example, cyclized rubber (Goodyear Pliolite), chlorinated rubber (Hercules Parlon) and polysulfide rubbers (Thiokol). These are used where air-drying types of alkali and acid-resistant finishes are desired. Because baking types of finishes are more decorative and also supply these protective needs better, the rubber finishes have only limited use in production finishes. They are more commonly used as maintenance coatings, where baking operations are not feasible.

Vinyl resin types

Possibly the vinyls are the most

publicized of the solvent-type resin finishes. In as far as coatings for industrial finishes for metal are concerned, the greater part of the developments employing vinyls has come about through the patient research and development of the men in the Bakelite Division of The Carbide and Carbon Company — particularly through the efforts of Dr. Quarles' group at the Mellon Institute. In the span of the past ten years, vinyl resin finishes have been established as the standard of quality for ship-bottom finishes. As yet, however, comparatively little of volume use has developed for vinyls in the traditional types of production finishes. Some of the major problems of vinyl resin finishes have been the limited solubility of the resins, which means thin films per spray coat, and hence multicoat systems are necessary. To complicate things further, the adhesion of vinyl resins to metal is not nearly as good as that of competitive alkyd-melamine finishes and, also, vinyl finishes have a marked tendency to yellow on baking or later on prolonged exposure to sunlight. Originally the cost was quite high. Over the past few years, several outstanding developments have occurred with respect to vinyl resins, namely:

(a) Better knowledge of how to get stability against yellowing either during baking or later on exposure to light.

(b) New types of primers for metal which provide excellent adhesion for certain vinyl resins — particularly the polyvinyl-butyral-phosphoric acid primers popularly known as "wash primers."

(c) Improved plasticizers which greatly enhance the durability and chemical resistance of vinyl finishes over a greater range of temperature. Recent developments of polyesters and urea resins which can be used in blends with vinyl have accelerated greatly the research on better vinyl finishes.

(d) Costs of vinyl finishes have been declining to levels competitive with other materials.

The remaining major objection has been the low-solids content of the lacquers and the consequent necessity for multicoats. Possibly this objection will be solved by the wide adoption of techniques of hot-spray. Some toluene soluble vinyl resins have been developed which might be applied from high solids solutions even at room temperature, but such present other formulation problems, particularly with respect to difficulty of pigmentation and adherence problems of the films.

Few, except the specialists in paint formulation, realize how much the vinyl lacquers of today differ from the rather primitive products of five years ago. Consequently, the possibilities of using vinyl resins in production finishes are much greater today than was the case when the promotion of these resins was first begun.

A very interesting development of recent years has been the vinyl organosols. In these finishes, thinners or solvents are used, as in lacquers, however with this important difference — here the vinyl resin is dispersed rather than dissolved — it is used in the form of suspended beads or insoluble resin particles. When the thinner evaporates, the resin particles are deposited along with the suspended pigment. When the coated surface is baked at temperatures of about 375° F., the vinyl resin particles fuse together into a continuous film. Since the vinyl resin has not actually been dissolved in the thinner, the paint can contain a high solids content and still can have a viscosity low enough to allow spraying. Hence, one coat finishes over a suitable primer are possible. Moreover, the organosol types of films far surpass the solution or lacquer types in toughness, abrasion resistance, flexibility and resistance to corrosive chemicals.

The defects have been that compounding such formulas is somewhat difficult, and, also, package stability considerations make it preferable to mix certain constituents of the formula together within a day or so before the finish is to be applied. This two-package delivery of one paint has always been an undesirable feature to production people. The mixing is not objected to particularly, but there is always the problem of the limited storage stability of any surplus of the mixed formula. This objection may be overcome by recent developments of spray guns which

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ADS OUT

What 20,000 women want in their kitchens

a report on buyers' preference for kitchen and laundry and for major appliances

by Albert P. McNamee • MANAGER, HOME APPLIANCE MARKETING, MCCALL'S MAGAZINE

YOU are all familiar with the old adage, "There is nothing permanent except change." If ever there was a time when this was true, it is today. We are living in a world of rapid and far-reaching changes. Even the youngest readers of this article know something of the radical effects upon our daily living and thinking resulting from the amazing scientific discoveries of the past half century. In our own lifetime we have seen tremendous changes in the fields of transportation, communication, and medicine.

Great changes—not so dramatic or revolutionary as to warrant front page attention, but nonetheless important in our daily life—have occurred in the home. Women are changing their pattern of homemaking, their ideas on child care, their thinking on food for their families. All of this can have far-reaching influence on American business—can either make or break you. Some of the recent changes of attitude are brought into clear focus through an analysis of the facts reported by entrants in McCall's Kitchen-Laundry Contest of last year—a preview of which I will present in this article.

A contest to stimulate critical study of kitchen and laundry

First let me give you a brief sketch of the objectives and operation of the contest. We had conducted a somewhat similar contest ten years ago. Our editorial people wanted to learn to what degree women's ideas and desires had changed in the intervening years. Also, we wanted to stimulate homemaking women to study their present workshops critically, to make them conscious of the shortcomings of their present kitchen and laundry equipment, and to arouse in them a realization of the contribution modern appliances make to the efficiently run household and to better family living.

The contest as announced in *McCall's* provided for $7,500 in prizes, in addition to two top awards of $1,000 each and complete installation of the new kitchen as designed. Each contestant received a six-page entry blank giving details of the steps required of her in remodeling her kitchen. The job was not easy by any means. She was obliged through the answering of certain prescribed questions to analyze herself, her family, her home, her manner of living, her desires for the future.

This done, she had to draw a plan of her present kitchen and make an inventory of the equipment she now has. Then she was required to redesign her kitchen as she would like to have it. Another inventory was made for the remodelled plan, with checked columns to indicate which items could be re-used and those to be purchased new. Also, she had to provide a paste-up of pictures of all appliances and equipment desired. These were obtained from advertising literature of manufacturers.

About 150,000 women requested entry blanks for this contest; in spite of all the work required, 20,000 completed and returned their entries.

Most of the entrants were women—98% in fact; 97% were amateurs. Contestants sent for more than a quarter million manufacturers' booklets to help them with their entries. As these women pored over these booklets and manufacturers' advertising, they were actually selling themselves new appliances, new kitchens. You all know—and believe me, I know it—when a woman gets an idea in her mind, she is restless until she does something about it. McCall's recently built an editorial kitchen in our studio in New York. I liked it so much that I took my wife to see it.

Albert P. McNamee *—manager of home appliance marketing of McCall's Magazine, has devoted more than twenty years to market research and merchandising of home appliances, personally conducting scores of studies involving appliance sales and marketing problems.*

Many of the studies made by Mr. McNamee for McCall's have been widely distributed. Among these are: "Appliance Retailing in a Mobilization Economy," 1952; "The Effect of the Korean War on Appliance Retailing," 1950; "Appliance Retailing in a Buyers' Market," 1949; "Appliance Retailing—2 years after the War," 1947; and "Wartime Servicing of Appliances," 1943.

This winning kitchen in the professional class, in the McCall's Kitchen Contest, was submitted by William Sayre, Denver, Colorado.

That little mistake cost me just $4,500 for a completely new kitchen.

As a result of the contest, scarcely a day goes by but we receive letters or phone calls from women saying, "I didn't win a prize in your kitchen contest, but I thought you might like to know that I have carried out the plan I made. Everybody who sees my new kitchen thinks it's wonderful."

The average contestant is the woman we should all keep in mind when planning kitchen promotions. She represents the more articulate homemaker—the leader who sets the pace. Well under 40 years of age, she is married, has two children, does all her own work. In fact, 92% of these entrants have neither part time maid nor laundress. Less than 1% have a full-time maid. 75% of the houses in which they live are of frame construction. Practically 80% own their homes. Since she has a great interest in kitchens and their equipment, as you might expect, she lives in a small city or town—60% of the contestants reside in places under 25,000 population.

What the average homemaker wants

Certain wants stand out clearly. The average contestant would like a larger kitchen, more windows, an eating area in the kitchen, and a first-floor laundry. She is beginning to regard an electric sink, a freezer, an automatic washer and dryer as necessities, just as much a part of her home as her refrigerator. Our contestant knows about divided ranges, new types of lighting fixtures, open planning. Also, she is finding it more and more difficult to work the many oddly shaped major appliances into a space which has become a general living area. Therefore, I can tell you that *there is evidence of a favorable trend toward appliances of the same brand because of complimentary styling.* Also, you may be surprised to learn that women showed a remarkable consciousness of the need for adequate wiring. They know that they cannot enjoy these modern appliances unless the electric system is able to carry the load. Our editors were somewhat surprised at the degree of wiring consciousness among our contestants.

Larger kitchens are coming back

By and large, plans call for bigger kitchens. Most women are no longer interested in the small, compact kitchen. Over 90% of the plans submitted call for more than 100 square feet. Kitchens of 12′ x 24′ were really common.

Some 27% achieved these larger kitchens by knocking out walls and partitions. A study of the entries gives rise to a picture of householders all over the country taking an axe to the sides of their houses. Not only did partitions fall; another 50% added or enlarged windows, while 40% either closed or added doors.

All of this pushing out of walls and tearing down of partitions add up to the fact that considerable carpentry is involved in kitchen remodeling. The older the house, the more complicated the job. The two top prizes in our contest were $1,000 each and complete installation of the new kitchen. It so happened that both of these winners had old houses, so that in addition to using an axe on the walls, we had to do a major construction job to reinforce foundations and floors to carry the added weight of the new equipment. We got a real surprise. We had expected to spend about $5,000 each on those kitchens, but with the additional construction costs, we got out with $9,000 in one case and $10,000 in the other.

The "living-kitchen"— a guide for appliance designers

The idea of the function of the kitchen has been going through a constant evolution. True enough, 50

years ago large kitchens were usual, but their use was limited to food preparation and very informal eating—in many homes for the maid or hired help. With the introduction of labor-saving devices and the practical disappearance of servants, mother found herself spending many hours in the kitchen, preparing meals, ironing, washing dishes, and often at the same time keeping an eye on the children. Naturally, the idea of a larger, more attractive place to work developed, and the kitchen became an attractive, all-purpose room—tastefully decorated. Soon it became a pleasant, convenient place to serve meals, a desirable spot for the laundry. Now it is apparent that women are beginning to regard the living-kitchen as not only acceptable but desirable.

McCall's first presentation of the first living-kitchens was in 1945. Now we find the idea coming back to us from such places as Spirit Lake, Iowa; Dover, Delaware; and Crosbyton, Texas.

No kitchen complete without pleasant dining area

Dining has definitely moved into the kitchen, and it would appear that no kitchen today is complete without a pleasant eating area. Significantly, 88% of the women in the contest voted for a dining area to be incorporated in the kitchen. There are still people who view with alarm the growing practice of kitchen meals. They wring their hands, and chant, "What, no candles, no centerpiece of flowers?" It's true that family meals are important and that they do build morale, but mother, who does all of her own work — cooking, cleaning, laundry — needs consideration too. An attractive dining area in the kitchen seems the best solution. Certainly those contest kitchens which incorporated a dining area were nice enough to permit that fine touch of candles and centerpiece. Incidentally, let us admit right here that the bar type of eating area does not qualify for regular or constant family use.

Editor's Note:

This article represents one of a number of feature reports by leading editors and executives of women's and home service magazines. It is recommended for reading by all top executives, sales executives and engineers in the home appliance manufacturing industry.

Then we suggest a review of the "power of the press" as represented by these magazines which live to study and to cultivate the thinking and the habits of the homemakers who buy and use home appliances. Four of the women's service magazines delivered to their readers last year over 500,000,000 editorial pages on the subject of kitchen planning and the contributions that modern appliances make to better living. Here is a force that cannot be ignored but which may be turned to advantage by top management, sales and advertising and the design engineer.

White still leads for cabinets and equipment

Style—Perhaps you would like to know something about what these kitchens look like. The cute and coy variety were in the minority, although there were a few lavender jobs. The great majority of contestants planned straight modern kitchens, while approximately one-third were of the Early American or farmhouse type. These latter had a nostalgic style of decoration — pine paneling, chintz, some with wallpaper, frilly curtains, candlesticks, and milk glass hens.

Wood cabinets showed a slight lead over steel; and regardless of whether they are wood or steel, 50% of the women still want all-white cabinets. If you class natural wood finish as a color, it received a higher preference than any of the others. These wood cabinets were incorporated in both modern and traditional kitchens, with entirely good effect. Yellow, green, blue and gray were the other popular colors for cabinets.

Plastic work counters won out over all other materials, with a 47.7% vote. During the ten years between our two contests, linoleum for counters has dropped in favor with women from 88% to 33%. Other specified in order of preference were wood,

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This winning kitchen in the amateur class was submitted by Mrs. Mary D. Henry, of Los Altos, California. Both kitchens are shown in detail in four-color in the July issue of McCall's.

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Gas appliance manufacturers meet

new officers elected at GAMA annual meeting held in Colorado Springs

AT the Gas Appliance Manufacturers Association's 17th annual meeting held recently at Colorado Springs, James F. Donnelly, assistant general manager, Permaglas-Heating Division, A. O. Smith Corp., was elected president.

Sheldon Coleman, president of The Coleman Company, Inc., became first vice president. T. T. Arden, chairman of GAMA's Pacific Coast Manufacturers Section, was chosen second vice president, to succeed Donnelly. Lyle C. Harvey, president and general manager of Affiliated Gas Equipment, Inc., and H. Leigh Whitelaw, managing director of GAMA, were reelected as treasurer and secretary, respectively.

Clarification of industry policies with respect to dealer relations, marketing and public relations, and intensification of sales training plans, highlighted the program.

J. F. DONNELLY, GAMA PRESIDENT

Henry H. Fowler, administrator of the National Production Authority, addressing the President's Dinner honoring Louis Ruthenburg, board chairman of Servel, Inc. and retiring head of GAMA, predicted substantially relaxed controls of most materials which are essential in the manufacture of gas appliances and industrial gas equipment.

Seventeen industry leaders honored

At a general session of all delegates, alternates and guests, meritorious service awards were presented by Ruthenburg to 17 industry leaders for their contributions to the progress of the gas appliance industry and the association.

Award winners included: H. M. Brundage, manager, automatic heating division, General Electric Co., for his work as chairman of GAMA's gas furnace group; Donald A. Campbell, vice president in charge of engineering research, Eclipse Fuel Engineering Co., and chairman of the Association's industrial gas equipment division; A. F. Cassidy, sales

Finishfoto taken at a luncheon session during Gas Appliance Manufacturers Association meeting in Colorado Springs.

Hosts at the Owens-Corning Fiberglas cocktail party, left to right: John McCord, Mrs. Zimmerman, W. P. Zimmerman, Mrs. McCord, Whit Kuenn, Bill Brown, Mrs. Brown, and Mrs. Kuenn.

manager, water heater division, Rheem Manufacturing Co., and chairman of GAMA's water heater division; J. N. Crawford, assistant to the president, Affiliated Gas Equipment, Inc., and chairman of the gas boiler group; F. A. Furlong, president, Autogas Co., and chairman, gas conversion burner group; Harry Gurney, sales manager, Janitrol domestic-commercial division, Surface Combustion Corp., and chairman of GAMA's gas house-heating and air conditioning equipment division.

Others honored by the awards committee were: F. Donald Hart, executive vice president, Temco, Inc., and chairman, direct heating equipment division; John W. Hebert, president and general manager, Calcinator division; Valley Welding and Boiler Co., and chairman, gas incinerator division; Frederic O. Hess, president, Selas Corp. of America, for his achievements as president of the Gas Appliance Manufacturers Association, 1950-51; Henry Honer, president, Western Stove Co., and chairman of the "CP" manufacturers group.

Awards also went to A. J. Kerr, chairman, Rockwell Manufacturing Co. (on leave as member of the National Production Authority), and chairman, gas meter and regulator division; C. S. Stuckenholt, president, The W. J. Schoenberger Co., and chairman, gas valve division; John V. Rerucha, president and general manager, Columbia Burner Co., and chairman, gas conversion burner group; Donald R. Mecksroth, director of marketing services, Servel, Inc., and chairman, GAMA's general marketing committee; R. O. Montrief, vice president and general manager, Ward Heater Co., and chairman, gas floor furnace group; J. R. Nason, secretary-treasurer, Williams Radiator Co., and chairman, vented recessed heater group; A. B. Ritzenthaler, first vice president of GAMA, 1951-52; and J. B. Reznor, Reznor Manufacturing Co., and chairman, manufacturer members sub-committee on approval requirements for gas unit heaters, 1949-52.

Frank Hayde, of Locke Stove; William Moiselle, of U. S. Air Conditioning; and Milton Clow, of James B. Clow & Sons, "toasted" each other.

Distinguished service award

Establishment of a Distinguished Service Award "for promotion and advancement of industrial gas utilization" was announced. Recipient of the first of these awards, selected unanimously by the industrial gas equipment division of GAMA, was Frederic O. Hess, who preceded Louis Ruthenburg as GAMA head.

A new multi-million-dollar market, dealer training and public relations

Following an analysis of the association's finances by Lyle C. Harvey, treasurer, and a report of the nominating committee by E. Carl Sorby, vice president, Geo. D. Roper Corp., the opening session of the convention heard Arthur S. Goldman, director of marketing and research for the *Architectural Forum* edition of the *Magazine of Building*, describe the recent relaxation of mortgage requirements as opening "a new multi-

million-dollar market" for gas appliances and equipment.

The same session viewed a graphic report of activities during the first year of GAMA's public relations and sales promotion program. The report, delivered by Gerry Swinehart, president of Carl Byoir & Associates, GAMA public relations counsellors, stressed successful efforts to build gas industry prestige, improve government relations, stimulate better merchandising, institute a dealer training program, and sell gas and gas appliances to the industry's various publics.

One of the principal themes of the GAMA meeting was the appeals by both utility and manufacturer representatives for closer industry cooperation and coordination of programs for selling and serving the gas user.

On the first evening of the three-day meeting, Frank C. Smith, president of the Houston Natural Gas Company, in a "Memo to the Chief Executive," urged gas utilities to "pick up the year-round gas load and service to homeowners" represented in the newer gas appliances, such as air conditioning systems, clothes dryers and incinerators, and in the refined forms of heating or cooling service to homes, commerce and industry. The gas companies, he said, should give manufacturers the benefit of their suggestions and of their field experience in customers' homes.

Ruthenburg's five factors for industry expansion

Describing the fast-growing, billion dollar gas appliance industry as "traditionally a reliable barometer of business ups and downs," Ruthenburg pointed to five factors which, he said, will contribute to its even greater expansion in 1952.

These include new extension of natural gas service; a large remaining potential for LP-gas, despite a four-fold increase in the use of this fuel since 1941; continuation of a 10-year trend which shows a 54.9 per cent increase from 19,146,000 to 29,662,000 in the number of residential gas customers; a coordinated program of advertising and promotion by the American Gas Association, the

Attending the party were this group from Rockford, Illinois. Left to right: Mrs. Hobson, Carl Sorby and Stanley Hobson, of Geo. D. Roper Corp.; Mrs. Campbell, and D. A. Campbell, Eclipse Fuel Engineering.

Gas Appliance Manufacturers Association, dealers and utility companies, involving an outlay of $10,000,000 this year; and a big replacement market for fully-automatic gas ranges, water heaters and refrigerators, more than 9,625,000 ranges alone being over 12 years old.

Charles E. Bennett, new president of the American Gas Association, after praising GAMA's planned effort to woo public favor for gas and gas appliances, urged gas industry executives to continue raising their sights and to "be more concerned with where we are going than where we have been."

"When in one year the American public consumes over six trillion cubic feet of natural gas," he said, "we have every right and a responsibility to act and progress as important leaders in American life."

By working together, the various

Miss Lucile Tepikian, GAMA; Fred C. Shaefer, new chairman industrial gas equipment division; Donald A. Campbell, retiring chairman.

Members of the domestic gas range division of GAMA approved "Operation Sales", the industry's new promotional program. Left to right, seated in front: Carl Horne, Rheem; B. B. Turner, Maytag; A. P. Chester, Globe American; Julius Klein, Caloric. Seated at table: Henry Honer, Western Stove; Marc Pender, Magic Chef; Maury Breslow, Utility Appliance; D. P. O'Keefe, O'Keefe & Merritt; A. B. Ritzenthaler, Tappan; H. L. Clary, Norge; J. H. Rasmussen, Perfection; J. I. Gorton, GAMA; E. Carl Sorby, Roper. Standing: Wendall Davis, Cribben & Sexton; W. T. Trueblood, Jr., Magic Chef; J. R. Conner, Globe American; H. E. Jalass, Cribben & Sexton; Geo. Mumma, Sunray; S. B. Rymer, Jr., Dixie Foundry; Cecil Dunn, Estate; Gordon Hentz, Estate; John Weymouth, Caloric; Marvin Rymer, Dixie Foundry; F. A. Kaizer, Detroit-Michigan; E. Kern, Pacific Coast Gas Association.

factors in the gas industry, he added, have lifted it to sixth place among major American enterprises.

Symposium stresses importance of marketing statistics

A well-attended marketing symposium foresaw a year of intensive marketing activity, utilizing already established statistical procedure as a basis for publication, beginning in 1953, of a statistical gas-appliance year book. Other plans call for using new techniques in forecasting and for finding ways and means of evaluating retail sales activity, also for achieving a two-way method of learning the market-information needs of operations executives and of giving them marketing facts which are custom-tailored to their operating requirements.

Donald R. Meckstroth, chairman of GAMA's general marketing committee, outlined the need for statistics to establish market patterns and provide yardsticks by which manufacturers can measure their own selling performance. He pointed out the value of accurate measurement of sales at the retail level and of the reporting of data which will help management set up production and distribution schedules.

Louis Ruthenburg (left), of Servel, retiring president of GAMA, and James F. Donnelly, of A. O. Smith, newly-elected president.

In a color slide presentation titled "Marketing Spots Before Your Eyes," vice chairman-elect of the marketing committee, A. F. Smith, manager, department of business information, A. O. Smith Corp., dramatized the thesis that "markets are people" by tracing the living, visiting and buying habits of families in small communities.

Fowler, whose appointment as Defense Production Administrator was confirmed during the GAMA meeting, provided a "straight-from-the-feedbox" prediction on the outlook for controls and allocations affecting all industries, particularly gas appliances.

"At the moment we are only halfway through the three-year program for the rapid, orderly build-up of our military strength and the industrial mobilization base," he said. "We have made enormous strides in increasing our capacity to produce steel, aluminum, rubber, certain chemicals, electric power and petroleum.

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ADS OUT

Stove manufacturers hold 20th meeting

illustrated exclusively with finishfotos

THE 20th anniversary meeting and concurrent exhibit of the Institute of Cooking and Heating Appliance Manufacturers was held in Cincinnati, June 2-4. The atmosphere of the meeting was clouded by new economic uncertainties set up by the steel strike which began the day the stove men were heading for their annual convention.

The sun will shine again

The introductory speech at the general session was presented by Walter F. Muhlbach, Institute president, and director of distribution and research, Florence Stove Company.

In his address entitled "The Sun Will Shine Again," Muhlbach stated that a potential market for home appliances is opening so fast that it's hard to believe. A population equal to that of the New England states, 8 mountain states, both Dakotas, plus Arkansas, is now coming into the picture. According to the Bureau of Census, Muhlbach pointed out, 10½ million new families will represent a "plus" market during the 1950's for 3,000,000 new gas ranges alone.

Some specific growing market areas were referred to by the speaker. There will be a million more families in California alone by 1960, with some 900,000 more families in Florida by the same year. However, Muhlbach warned the stove manufacturers that they just can't sit around and wait for 1960 to get here, because the greatest growth will be in the first half of this decade, more specifically 60% by 1956.

Regarding the present "dullness" of the market, Muhlbach stressed that the company which keeps plugging at sales will be the ones that will get ahead. "We know that the sun will shine again, and it will shine exceedingly bright," concluded Muhlbach.

How to keep our liberty

The subject of the next general session speaker, Raymond Moley, was "How to Keep our Liberty." Moley is a contributing editor of *Newsweek*.

Regarding the political scene, Moley said that a definite change in administration will be for the better. He told his audience to beware of the welfare state, and asked them not to expect political parties in this country to bring about a change. The change must be brought out by the people who must get out and vote.

Regarding the voters of this country failing to exercise their right of selecting their government officials, Moley stated that only 48,000,000 persons voted in the 1948 elections. "Only 54% of the eligible voters went to the polls—there is the heart of the problem."

You can do all the advertising and promotion you want, but somebody has to get hold of the customer to sell him the goods, said Moley, adding that this is true in elections as well.

Carl P. Bersing, director of industrial relations, Norge Division of Borg-Warner Corp. warned the cooking and heating appliance producers that "you must accept the moral obligation of concluding your own negotiations with your employees". His address was entitled "Free Collective Bargaining Versus Government Encroachment on Employee Relations."

A dealer's point of view

Mort Farr, president of Mort Farr's Inc., Upper Darby, Pa., and president of the National Appliance and Radio-

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Photos of Exhibits . . . →

At general session speaker's table, left to right: Carl Bersing, Norge; Raymond Moley, Newsweek; Walter Muhlbach, ICHAM president; Mort Farr, Mort Farr's Inc.; Pauline Dunckel, ICHAM executive secretary.

At the ICHAM 20th anniversary meeting, the booth of Tinnerman Products, Inc. reported good attendance of stove manufacturers.

Left to right: C. G. Lewis, Wiegand; J. A. Hand and F. H. Guthrie, of Newark Stove; and Don Owen, of Wiegand.

Hank Gibson, of Lux Clock; Harvey J. Wilde, of Quincy Stove; and Gene Crandall, of Lux Clock.

Fiberglas photographer snaps F. W. Edwards, of Hotpoint. On the right is C. E. Kitchen, of Owens-Corning Fiberglas.

finishfotos

Pretty waitress served coffee to Tom Miles, Ferro Electric; Frank Henke, Harper-Wyman; Gordon Hentz, Estate Stove; J. R. Kauffman, T&K; D. V. Tuttle, Ferro Electric; H. J. Berman, Lindemann & Hoverson; and Mort Farr, of Mort Farr's Inc.

In Nubian-Glidden booth: Sheldon Coleman, Coleman; Tom Sourbeck, ret., Magic Chef; Tom Armel, new Glidden indus. gen. sales mgr.; Phil Russel, Detroit Lub.; Bob Frazier, Cavalier; Roy Johnson, A-P Controls; Sam Dunckel, ICHAM; Nat Armel, Glidden.

F. H. Post, Robertshaw-Fulton Controls; R. A. George, Rutenber Electric; G. A. Bowman, Robertshaw-Fulton Controls.

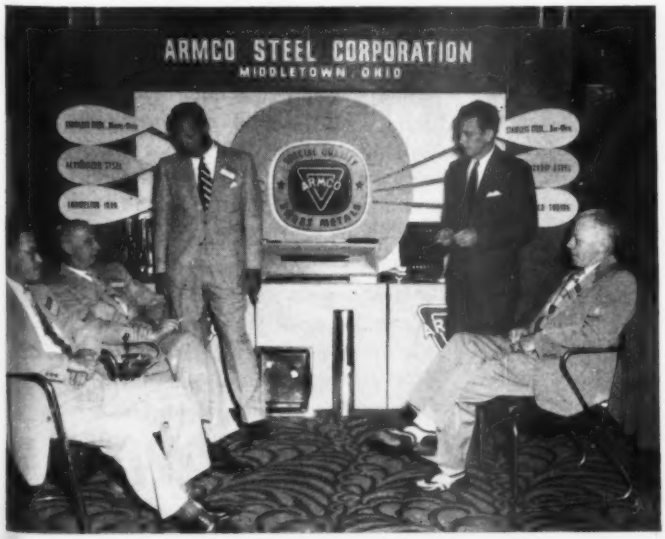
W. K. McHenry, Corning Glass Works; H. J. Moss, Dixie Foundry; Malcolm H. Hunt, Corning Glass Works.

Fred C. Lowber, Deepfreeze; E. C. Smith, International Register; J. E. Shepherd, Shepherd Manufacturing.

R. G. Marsh, Union Steel Products; Russell Landless, Philco; R. W. Hawes, Union Steel Products.

finishfotos

Shown in the booth of Armco Steel Corporation are the following: C. J. Thomas, of Rutenber Electric; J. P. Rogers, Rutenber Electric; Jack Hagan, Armco Steel; W. B. Nixon, Armco Steel; and R. S. Goldthwaite, Rutenber Electric.



Shown with a pretty model in the Porcelain Enamel Institute booth are A. B. Friedmann, Chicago Vitreous; J. M. Hurd, Ingram-Richardson; and John Oliver, PEI. Cooperative exhibit was sponsored by Chicago Vit, Ferro, Ing-Rich, and Pemco.

F. H. Schneider, Florence Stove; W. O. Apt, Hommel; M. M. Reeves, Florence Stove; Ernest Hommel, The O. Hommel Company.

R. E. Imhoff, Detroit Brass & Malleable; Milburn Dick, Wrought Iron Range; J. S. Gabry, Detroit Brass; and E. Carlson, Detroit Brass.

R. H. Sievers, Souther Iron; M. J. Baker, Sunray Stove; T. S. Baker, F. J. Kindl and B. L. Matthews, of W. J. Schoenberger; and Glen Butcher, Sunray Stove.

TV Dealers Association, followed with an address on "A Dealer Looks at the Stove Business."

There is a fertile field opening in the cooking apliance field, but the question is how you look at it, said Farr, stressing Mr. Muhlbach's point concerning the 10½ million extra families who will be appliance buying prospects during this decade.

This new market must be sold, and it will take some selling—just as in any normal market, said the speaker, adding that anyone who was in business 12 years ago should know what a normal business is, and what selling is necessary in a normal market.

Before coming to the convention, Farr stated that he had made a survey of many dealers in his Association, and come up with some important information, some of which follows:

More local advertising

Dealers want more planned local advertising—even if it means cutting down on national appliance advertising . . . . readers are skipping over too many ads because there is nothing in the ads creating a desire to buy a new stove . . . . dealers are very interested in trade-ins which are an important part of their business. Dealers want special promotion models in the spring and fall . . . . better supervision of dealer franchises . . . . more stove demonstrations with smaller crowds consisting of "hand-picked" prospects . . . . desire for salesmen training kits, including films and slides.

Weakest sales link is the distributor salesman

Farr pointed to the distributor salesman as the weakest link in the sales picture. He stated that top management had better get out into the field and meet the dealers in their stores, and work with them to get their sales programs moving. However, he warned that they should not start any stove promotions in the dealer field unless they can sell their own organization on it.

The speaker concluded that "dealers are now going through a toughening course" which should get them back into aggressive selling.

Trends in kitchen planning

In an address before the Electric Range Division, Albert P. McNamee, manager of home appliance marketing, McCall's, discussed "The Electric Range and Trends in Modern Kitchen Planning" (see page 35).

The engineer's role in developing product sales appeal

Three different ICHAM divisions had discussions on the subject of the engineer's responsibility for developing product sales appeal.

Ellsworth Simms, chief engineer, Estate Stove Company, told the Gas and Combination Range Division that the "engineering department is but a member of the team which works to produce a profit. Other members of the team are sales and production."

The responsibility for endowing the engineering sections of company organizations with proper sales thinking is one which management must accept, stated Simms. He then posed some questions for management:

Do engineers understand the business? Do engineers attend a portion of sales meetings? Is the engineering head a full member of the managerial staff? Do you conduct product meetings for the expressed purpose of sales and engineering discussing problems and product lines? Are you presenting your engineers with factual information? Have you analyzed the engineering head for his sales consciousness? Do you engineers have a good understanding of your manufacturing facilities?

"Management which is aware of the necessity for creating products with sales appeal and who will honestly apply answers to the foregoing questions will have gone far toward solving their problems," said Simms.

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PAUL NELLIGAN DIES, REEVE NAMED PRESIDENT OF EASY

Following the death of H. Paul Nelligan, on May 17, W. Homer Reeve has been elected president and a director of Easy Washing Machine Corp.

Nelligan had been with Easy since 1934, and in 1941 was named president. He served as president of the American Home Laundry Manufacturers Association in 1949-1950.

Reeve, prior to his election as president, was vice president and general manager. He had been with Easy for 12 years, and previously was associated with Frigidaire in a sales and management capacity.

SEEGER ADVANCES WOLFERT TO MANAGER OF RESEARCH

E. R. Wolfert, formerly manager of engineering, Seeger Refrigerator Co., Evansville, Indiana, has been appointed manager of engineering and research. Wolfert is active in the major appliance division, farm and home freezer section and the household refrigeration section of the National Electrical Manufacturers Association.

ADMIRAL TO CONSOLIDATE REFRIGERATOR PRODUCTION

Ross D. Siragusa, president, Admiral Corporation, has announced a major expansion program at the company's Midwest Manufacturing Corp. subsidiary, at Galesburg, Illinois, which will consolidate the production of all Admiral refrigerators at that plant in the fall. At present some of the company's refrigerators are produced by another firm.

CROSLEY DEFENSE PRODUCTION BEGUN IN NEW PLANT

Production of certain components for defense products is underway in a new building recently completed by the Crosley Division of Avco Mfg. Corp., Richmond, Indiana, it was announced by John W. Craig, Avco vice president and Crosley general manager.

The new structure, adjacent to Crosley's refrigerator plant, provides 211,200 square feet of manufacturing space, all of which will be used to produce fire control equipment for the Air Force and Navy. Full production will not be attained until sometime next year, said Craig.

PHILCO NAMES SKINNER TO HEAD DISTRIBUTION

The appointment of James M. Skinner, Jr., as vice president of distribution for all domestic division of Philco Corporation has been announced by James H. Carmine, executive vice president. Skinner has been with Philco since 1934. For the past year, he was vice president of sales for the refrigeration division.

COTES HEADS MOTOR WHEEL

M. F. Cotes, formerly executive vice president, Motor Wheel Corp., has been elected president and general manager, succeeding John E. Garlent who retired. Don F. Jones was named vice president in charge of engineering of the firm's Duo-Therm Division.

Cotes has been a trustee of the Institute of Cooking and Heating Appliance Manufacturers since 1941, and in 1947 served as Institute president.

PERFECTION UPS SKOVE TO SEC.-TREAS., NAMES NEW P. A.

Perfection Stove Company has announced the election of P. T. Skove, formerly purchasing agent, as secretary-treasurer to succeed George McCuskey who resigned to take a position with The Youngstown Sheet & Tube Co.

W. H. Mansfield was named to succeed to the position of purchasing agent. He has been a member of Perfection's purchasing department since 1947.

GLOBE AMERICAN PLANT UNDERGOING EXPANSION

Globe American Corporation, Kokomo, Indiana, has begun to construct and streamline production facilities in their main plant. According to Arol Hall, plant superintendent, the principal project is a 50′ x 250′ extension which will relieve crowded conditions on the main assembly line. It will straighten out the line and assure better coordination among the various production operations.

HARRIS NAMED GENERAL MGR. OF HARVESTER REFRIGERATION

Charles D. Harris, manager of refrigeration engineering, has been named general manager of the refrigeration division of International Harvester Company, Evansville, Indiana. He succeeds Mark V. Keeler.

F. J. Hausfeld, staff assistant to the works manager, was named manager of refrigeration engineering.

Other appointments included J. S. Palmer, chief engineer of the advanced design group, and A. R. Edwards and J. A. Galazzi, chief engineers of the experimental and test

group and the production engineering group respectively.

UNIT STOVE JOINS AGA

Unit Stove & Enameling Co., North Birmingham, Alabama, is now a member of the American Gas Association, according to an AGA report. Executives of the company include Elmer E. Logan, president, and Roger E. Logan, vice president. Noble D. Jones has charge of the firm's new porcelain enamel department.

CHICAGO INDUSTRIAL DESIGNERS STUDY REFRIGERATORS, FREEZERS

The Chicago chapter of the Industrial Designers Institute took a look into the future of home refrigerators and freezers at their May 22 meeting and generally concluded that table top modular-type units offer the design and merchandising appeals that could capture consumers' interest.

Panel members at the monthly meeting included M. R. Wilson, general sales manager, Thor Corporation; J. C. Maynard, chairman, Fulton Morrissey advertising agency; and C. E. Waltman, designer. Joe Mango, chapter president, served as moderator.

DOMESTIC OIL BURNERS IN USE TOTAL 5.7 MILLION

With the installation of 675,060 domestic oil burners in central heating plants in 1951, the total number of oil heating installations in use at the end of 1951 was 5,704,557, according to the Plumbing and Heating Industries Bureau. The figures were tabulated from a survey by *Fueloil and Oil Heat*.

In the five years ending December 31, 1951, the number of central heating oil burners in use rose by 2,898,000, the Bureau reported.

ELECTRIC WATER HEATER SHIPMENTS FOR FIRST QUARTER

Latest available figures for electric storage water heaters show that 164,300 units were shipped during the first three months of 1952, compared to 272,600 units shipped during the same period of 1951.

HOTPOINT TO RETOOL DEFENSE PLANT FOR REFRIGERATORS

yearly rated plant capacity in excess of 350,000 units

Hotpoint Co., Chicago, will begin retooling its defense factory this fall for the production of refrigerators, with pilot runs scheduled for June, 1953, John C. Sharp, president, has announced. This will be the first new major refrigerator facility to be placed in operation in the Chicago area for the last 20 years, and the largest in the nation since the end of World War II, it was stated.

The present defense factory, located across the street from the company's electric range factory, contains approximately one million square feet of manufacturing space, and is currently producing jet engine components for the U. S. Navy. Sharp said that at the Navy's request, Hotpoint will continue to manufacture jet components permanently in this factory, although the bulk of the manufacturing space will be made available for refrigerator output. Hotpoint refrigerators are now manufactured in an eastern factory.

Originally designed for refrigerator production, the plant was altered before its completion to supply components for J-48 jet engines. Recently, the government's rescheduling of defense contracts resulted in reducing total quantities of certain types of jet engines needed by the Navy.

Plans call for the manufacture of all parts for the refrigerators at the plant. The factory was designed originally for integrated manufacture with the range factory from which it is separated by conveyorized overpasses which permit fabrication operations to be carried on in one plant, and assembly functions in the other.

Rated capacity of the refrigerator factory will be in excess of 350,000 units a year. The plant has shipping facilities which can accommodate 35 railroad cars daily. It is expected that when the factory reaches rated production, the company will employ an additional 2,000 persons.

Sharp pointed out that the refrigerator factory will round out the company's full line of appliances being made in the Chicago area.

APRIL LAUNDRY EQUIPMENT SALES

Factory sales of standard-size household washers in April totaled 217,211 units, compared to 248,431 units in March, according to the American Home Laundry Manufacturers Association. The April 1952 total compares to an industry-wide total of 292,193 units sold in April, 1951.

Automatic tumbler dryers sold in March totaled 36,109, down from 41,161 in March, and a gain over 32,960 units sold in April, 1951.

Sales of ironers in April totaled 8,938 units, compared to 13,913 units in March, 23,700 units sold in April, 1951.

PEOPLES NAMED CHAIRMAN OF BOILER-RADIATOR INSTITUTE

Wesley J. Peoples, president and chairman, United States Radiator Corp., was elected chairman of The Institute of Boiler and Radiator Manufacturers as the 37th annual meeting held in New York, May 7-9. Roberts S. Waters, president, National Radiator Company, was elected vice chairman.

ELECTRIC RANGE SHIPMENTS TOTAL 275,500 FOR QUARTER

Latest available figures on electric ranges show 275,500 units were shipped during the first three months of 1952, compared to 461,800 shipped during the first three months of 1951.

NEMA REFRIGERATOR SALES TOTAL 851,375 IN FIRST QUARTER

A total of 851,375 refrigerators were sold during the first quarter of 1952 by NEMA members, according to a report of the National Electrical Manufacturers Association. This total is down 44% from the 1,503,476 units sold by NEMA members during the same quarter in 1951.

HARRY SPENCER TO TECUMSEH

The appointment of Harry L. Spencer as vice president of Tecumseh Products Co., Tecumseh, Michigan, has been announced by R. W. Herrick, president. Spencer will be assistant to the president in charge of new products.

Spencer resigned last February as vice president in charge of manufacturing and engineering for the Norge Division of Borg-Warner Corp. During the past few months he has been engaged in engineering consulting work.

STEEL KITCHEN CABINET MFRS. HOLD MID-YEAR MEETING

Following plans set up at its organization meeting last December, the Steel Kitchen Cabinet Manufacturers Association has been holding quarterly meetings, the mid-year event taking place at the Cleveland Hotel, Cleveland, Ohio, June 4. The event was attended by thirty executives from member companies. Interest was keen and further definite steps taken in building a program of full activity.

The Packaging, Transportation & Traffic Committee reported progress in handling their assignment. A. C. Deimel, general traffic manager of Mullins Manufacturing Corporation, is chairman.

F. E. O'Connor, of Geneva Modern Kitchens, chairman of the membership Committee, advises the affiliation of the Richmond Metal Manufacturing Corporation. O'Connor also reported it was expected certain additional companies would soon be affiliated.

R. W. Sponholtz, of Geneva Modern Kitchens, as chairman of the Technical, Standardization & Simplification Committee, reported that progress was being accomplished on selected technical subjects.

Chas. A. Morrow, of Youngstown Kitchens, chairman of the Trade Statistics Committee, presented a plan for statistical interchange of products produced, both on a national unit basis and a "trading area" dollar volume basis. After the unanimous approval of the committee's recommendations by the board of directors, the general sessions meeting endorsed the recommendations, in connection with which the Business Information Division, Dun & Bradstreet, Inc., will render an important service thru assembling and publishing facts to contributing companies. The industry has for some time been in need of sound, basic, industry information which the new arrangement provides.

The treasurer's report indicated the Association is in a sound financial condition.

In commenting on the meeting, Arthur J. Tuscany, executive secretary-treasurer, stated "Steel kitchen cabinet manufacturers, thru their national association, are making definite progress in establishing worth while helpful activities; those which will assist the customers of the industry and the manufacturers, as well".

HOTPOINT NAMES MCDANIEL MARKETING MANAGER

John F. McDaniel has been promoted to manager of marketing, Hotpoint, Inc., according to announcement by John C. Sharp, president.

McDaniel was formerly sales manager. In his new position he will direct all company marketing activities including advertising, sales promotion, and sales training through a national sales organization including 11 sales districts, 100 distributors, and 11,000 dealers.

McDaniel's entire business career has been with Hotpoint, beginning in 1934 when he enrolled in the firm's first special sales course. He has held positions in sales administration in all areas of the company's business. In 1948, McDaniel became assistant sales manager, moving up to sales manager in 1951.

ARTHUR LONG DIES

Arthur M. Long, 63, assistant general sales manager, The Youngstown Sheet and Tube Co., died May 24. He had been with Youngstown since 1926, and previously was associated with Jones and Laughlin Steel Corp., and Trumbull Steel Co.

HAMMELL NAMED PRESIDENT OF CENTRAL ENAMELERS CLUB

At the May 16 meeting of the Central District Enamelers Club, Richard Hammell, of Tappan Stove Company, Mansfield, Ohio, was elected president.

Other new officers include: first vice president, L. W. Farrow, of Clyde Porcelain Steel Corp., Clyde, Ohio; vice pres., Rush S. Dale, Ervite Corporation, Erie, Pa.; vice pres., Wesley Reynolds, Erie Enameling Co., Erie, Pa. M. J. Bozsin, of Ferro Corporation, Cleveland, was reelected secretary-treasurer.

At the meeting, held at the Allerton Hotel, Cleveland, James F. Dawson, economist, National City Bank, Cleveland, talked on "A Crystal Ball Look at Home Appliances", and B. J. Sweo, director of ceramic research, Ferro, discussed "Direct Application Process for One-Coat White."

PEI ANNOUNCES PROGRAM FOR PLANT MEN'S FORUM

A full and varied agenda, aimed to interest the practical enameler, has been announced for the 1952 Shop Practice Forum of the Porcelain Enamel Institute. This year's three-day session, at which upward of 300 enameling representatives are expected, will be held at the University of Illinois, in cooperation with the University's Department of Ceramic Engineering. The dates are September 10, 11, and 12.

A feature of the opening day will be an entire session devoted to the latest developments on topics of general industry interest. Such topics as "One Coat Whites Directly on Steel", "Fluorescent Enamels", "Stable Colors in Titania Opacified Enamels", and "Low Temperature Enamels" are among the subjects that will be discussed.

The second day will find the subject of "Enameling of Aluminum" being discussed in many of its aspects. Leading authorities will speak on this timely subject, and representatives of plants doing actual work in the

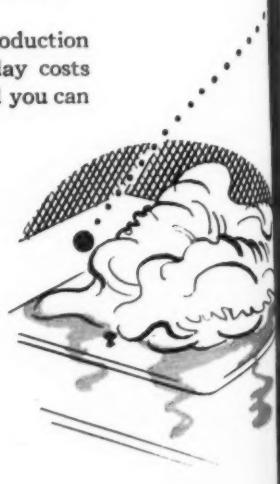
can porcelain enamel help you sell more automatic WASHERS?

In these days of soft markets and intensive competition for the consumer's dollar, appliance makers are turning again to porcelain enamel. And well they might, for here is a *proven selling feature* that costs them relatively nothing.

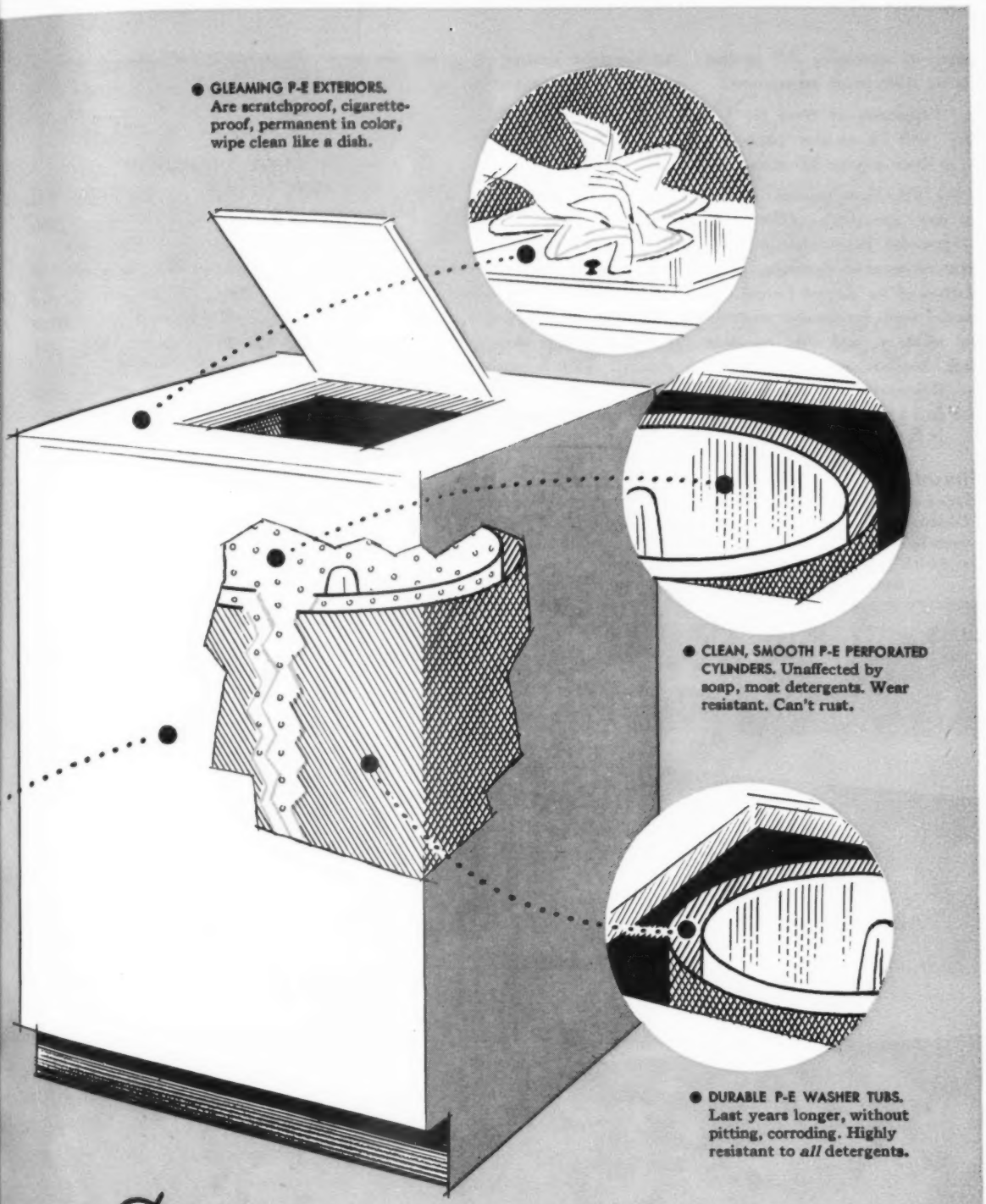
Mrs. Homemaker (and her husband, too) know porcelain enamel for what it is . . . the *lifetime* finish. They know it to be enduringly beautiful; alkali, heat and wear resistant; completely sanitary; easy to keep clean . . . in short, the *quality* finish.

What they don't know is that, while other production costs have climbed steadily, porcelain enamel today costs little if any more than it did twelve years ago. And you can use lighter gauge, lower cost steels because today's porcelain enamel coatings are thinner, lighter in weight, fired at lower temperatures. What's more, they're tougher, too . . . *and how you can demonstrate this on the selling floor!*

Yes, you are going to see porcelain enamel on more and more appliances . . . used in more and more ways by the industry. Perhaps *you* will be one of these industry leaders. If you have thoughts along this line, we should be able to help you. Let's get together!



● STAINPROOF P-E DOOR LINER. Won't fade in color from steam and detergents. Wear and scratch resistant.


● GLEAMING P-E EXTERIORS.
Are scratchproof, cigarette-proof, permanent in color, wipe clean like a dish.
● CLEAN, SMOOTH P-E PERFORATED CYLINDERS. Unaffected by soap, most detergents. Wear resistant. Can't rust.
● DURABLE P-E WASHER TUBS. Last years longer, without pitting, corroding. Highly resistant to *all* detergents.

FERRO

Porcelain Enamel Division

FERRO CORPORATION

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enameling of aluminum will present reports on their plant experiences.

The "Properties of Steel for Enameling" will be another paper expected to draw a large following.

In the afternoon session of the second day, attention will be given to the growing importance of high temperature ceramic coatings. Representatives of the Armed Forces will discuss the needs for ceramic coatings by the military, and then possible post-war implications will be considered. Representatives of companies that are doing actual work in the high temperature coating field will then present their plant experiences.

The important subject of new uses for porcelain enamel and consideration of the work that is being done in the development of alkali-resistant porcelain enamels will also be included on the program.

On the third day, representatives of key enameling companies will discuss control practices which are in common usage throughout the industry. This is expected to be one of the most comprehensive discussions on the subject ever presented.

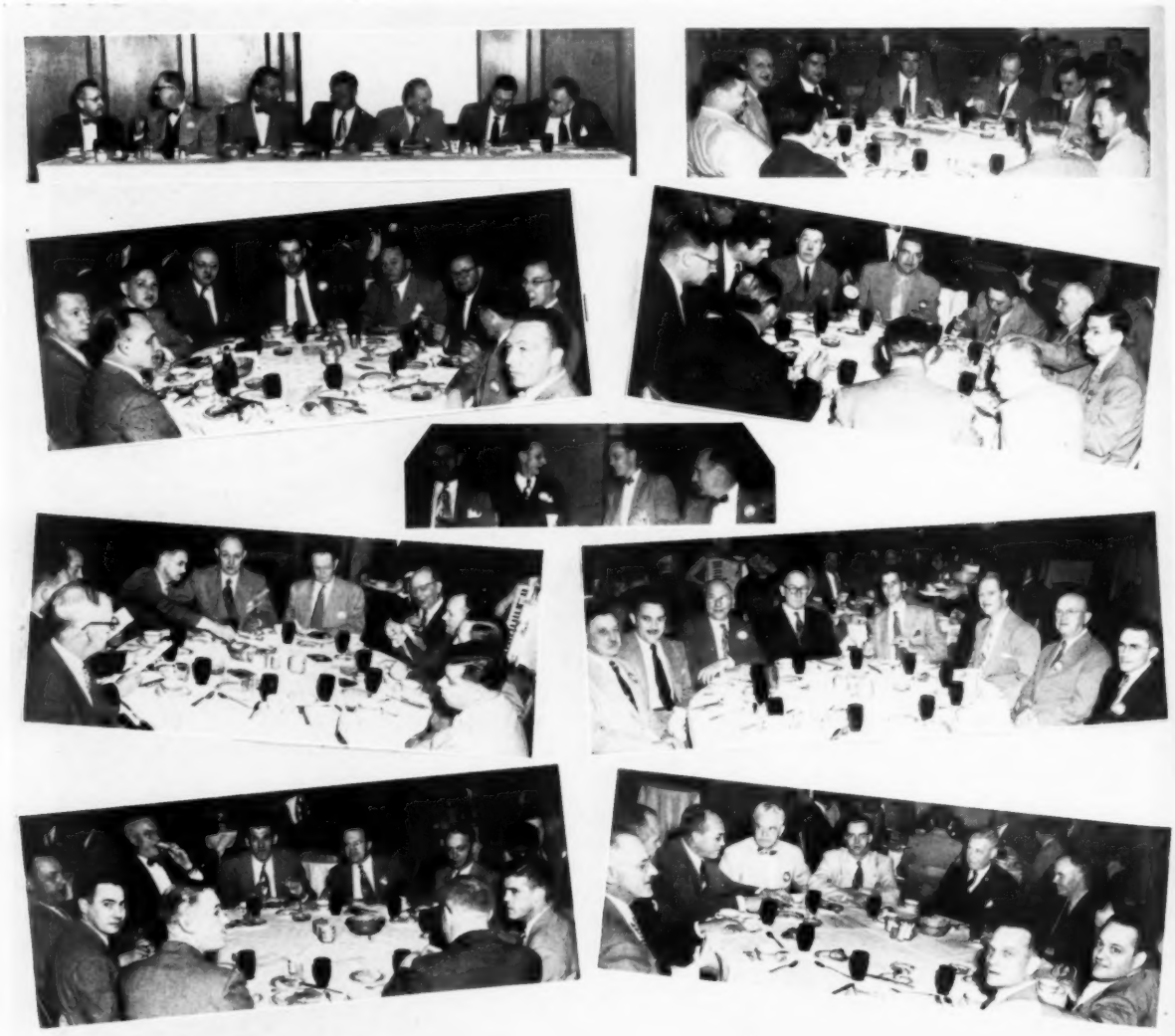
The meeting will conclude with the ever-popular "Board of Experts" in which persons in the audience will submit their enameling problems.

FOREIGN DISTRIBUTION FOR DRYOMATIC DEHUMIDIFIERS

Dryomatic Corp., Alexandria, Va., will export its line of fully automatic dehumidifiers, it was announced by Anthony Hass, vice president of sales.

Hass said demand for the equipment was growing constantly, particularly in port cities and equatorial points where high humidities cause excessive damage.

Finishfotos taken at Eastern Enamelers Club meeting — *in Philadelphia, May 17. Speakers included R. A. Dadisman, of Armco Steel Corp. and president of the Porcelain Enamel Institute, discussing "Looking Ahead with Porcelain Enamel", and R. A. Weaver, of Bettinger Corporation, discussing "High Temperature Enamel Coatings" and illustrating his talk with colored slides. A movie, entitled "Labrador Railroad by Airlift", presented through the courtesy of Armco, showed how 5 steel companies are determinedly pushing a railroad through Canadian wilderness in order to reach the rich Labrador ore fields.*



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HERE...AT FRIT HEADQUARTERS WE HAVE THAT "KNOW HOW"!

Yeah . . . we have some 'guys' around here who know how to catch fish . . . . but much more important . . . there are also a lot of folks here at ING-RICH who, over a long period of years, have had daily experience in the actual use of Frit.

Sure . . . we have our experimental laboratory . . . *but* . . . just as important . . . out in our job enameling plant we have to produce, day in and day out, the sort of enameling which will be accepted by our job enameling customers.

That's why we claim we have that "*Know How*" which will cut your rejects . . . and, naturally, cut your costs down to that point upon which good management insists.

INGRAM-RICHARDSON, INC.
OFFICES, LABORATORY AND PLANT
FRANKFORT, INDIANA

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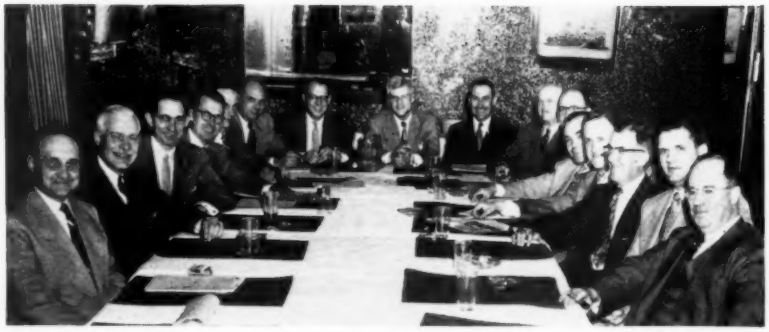
PORCELFRIT
"The Plant Tested Frit"



Finishfoto of general enameling division — *of the Porcelain Enamel Institute—at May 16 meeting at Ambassador East Hotel, Chicago. Clockwise: J. A. Holcomb, Wolverine Porcelain; Mark Van Der Kloet, Erie Enameling; J. R. Sweeny, Porcelain Metal; W. A. Barrows, Barrows Porcelain; John Oliver, PEI secretary; D. H. Malcom, Armco Steel; C. P. Lohman, Pemco; J. W. Vicary, Ervite; Thur Schmidt, Ingersoll Products; Edw. Mackasek, PEI managing director; D. M. Meeker, Toledo Porcelain; J. E. Bourland, Texlite; W. C. Chandley, Ervite; J. H. Young, Atlas Enameling; H. A. Ringelberg, Challenge Stamping; J. H. E. McMillan, Ingram-Richardson.*

PFAUDLER UPS ORR

The Pfaudler Company's Elyria (Ohio) Division has announced the appointment of Stanley C. Orr as assistant factory manager. Orr began his career with the company in 1937 as assistant ceramist. He became chief ceramist in 1947, the position he held until his recent appointment.

Robert McWilliams was named to succeed Orr as ceramist. He will supervise glass lining operations and technical problems.

NEW BINKS CLEVELAND OFFICE

Binks Manufacturing Company has moved its Cleveland offices and warehouse to new and larger quarters at 1241 W. 9th St., Cleveland 13, Ohio. R. B. Fulton, district manager, heads up the new office. H. G. Pankratz is district engineer. Sales representatives in the Cleveland territory are George Sherwood, Cleveland; George Mally, Indianapolis; and John Homan, Cincinnati.

Crosley suppliers' good-will tour — *More than 400 industrial leaders from several states, whose companies supply materials and components for Crosley and American Kitchens Division of Avco Mfg. Corp., visited the company's plants in the Cincinnati area, May 13. Left to right: Lt. Gen. Albert Wedemeyer, now on leave from his posts as Avco vice president and director; G. Carlton Hill, Cincinnati banker; John W. Craig, Avco vice president and Crosley general manager; Geo. Sommers, general sales manager, Sylvania; Max Balcolm, Sylvania chairman; Frank W. Warner, Crosley director of purchases; and Leonard F. Cramer, Crosley assistant general manager.*

DEVILBISS SPRAY FINISHING SCHOOL ON WEST COAST

The DeVilbiss Company's spray finishing school is being transferred to the West Coast where classes will be conducted for two months beginning July 1.

Emil F. Frey, director of sales promotion and advertising, said this marks the first time in the school's 26-year history that the doors of the Toledo classroom will be closed. Upon conclusion of the West Coast sessions, regular classes will be resumed in Toledo.

George I. Stoddard will conduct the classes which will be held at the University of Santa Clara, with actual shop practice in the nearby DeVilbiss plant in Santa Clara, Calif.

SPARKLER WEST COAST BRANCH

Sparkler Mfg. Co., Mundelein, Ill., manufacturer of filtration equipment, has opened a West Coast branch office and warehouse in Los Angeles. Richard E. Shields has been appointed West Coast sales manager.

EKCO BUYS MAJORITY OF REPUBLIC STMPG. STOCK

Ekco Products Co. has purchased 92.8 per cent of the stock of Republic Stamping and Enameling Co., Canton, Ohio. Republic is reported to have done a $3,000,000 volume business in enameled kitchen ware and other products in 1951.

ING-RICH NAMES HUTCHISON PRODUCT DEVELOPMENT ENGR.

Clark Hutchison has been appointed product development and technical engineer, Ingram-Richardson, Inc., Frankfort, Indiana, according to an

announcement by R. H. Coin, president. He will have charge of product and technical developments.

A University of Illinois graduate in 1936, Hutchison worked for Youngstown Pressed Steel Co., and later as director of research for Ingram-Richardson. Most recently he served as ceramic engineer for the Freight Claim Division of the Association of American Railroads.

Hutchison has served on committees of the Porcelain Enamel Institute and the American Ceramic Society, and was a former chairman of the ACS Enamel Division.

FOOTE INCREASES SPODUMENE HOLDINGS

Foote Mineral Co. has purchased surface rights to 37 acres adjoining their Kings Mountain holdings in North Carolina. At this location the firm is mining spodumene, a basic raw material in the production of lithium chemicals.

IRON & STEEL INSTITUTE PRESIDENT RETIRES

Walter S. Tower, for twelve years president of the American Iron and Steel Institute, has retired. He will continue with the organization in an advisory capacity. Max D. Howell, vice president and treasurer of United States Steel Corp., was named to a newly-created post of executive director of the Institute.

FERRO ADVANCES BOZSIN TO CHIEF CHEMIST

Ferro Corporation, Cleveland, has appointed Michael J. Bozsin, formerly process research engineer, to the position of chief chemist, according to an announcement by C. D. Clawson, president.

Bozsin has been with Ferro's chemistry department since 1929. He has distinguished himself as a leading authority on gas analysis in porcelain enameling plants. An analytical chemist by training and experience, he has specialized in determination of harmful gases in furnace and plant atmospheres.

In 1947, with C. A. Vana, Bozsin built and made available to the industry the first apparatus (known as the Bozsin Box) for determining in-furnace temperatures of porcelain enameled ware (*see July 1948 and July 1951* finish).

Ferro's new chief chemist is a member of the "board of experts" of the Porcelain Enamel Institute, a member of the American Ceramic Society, and secretary-treasurer of the Central District Enamelers Club.

PENNSALT UPS COLLINS

George B. Beitzel, president, Pennsylvania Salt Mfg. Co., has announced the promotion of George T. Collins to president's assistant. Collins was previously manager of market research.

ENAMEL INSTITUTE OPENS DOOR TO NEW MEMBERS

The Porcelain Enamel Institute has opened its doors to new membership and states that three distinct types of manufacturers are eligible to become active members. They are (1) "captive" porcelain enameling plants — manufacturers of stoves, refrigerators, and other porcelain enameled products who have their own enameling facilities, (2) suppliers to the industry including those allied with frit manufacturers, and (3) independent porcelain enameling companies engaged in enameling the products or components of other manufacturers.

To acquaint interested companies with the Porcelain Enamel Institute, a spokesman cites some of the special activities which are sponsored by the Institute: the annual Shop Practice Forum, at which latest shop techniques and practices are discussed; the nationally-acclaimed Safe Transit Program to reduce shipping damages; the development of quality tests and standards for the industry; the PEI-supported research fellowship at the National Bureau of Standards; the continuing study of latest processing techniques by recognized industry leaders; and the issuance of periodic reports on government specifications, standards, and activities affecting the industry.

***American-Standard's display** — in the traveling exhibit "Industrial Progress, U.S.A." Left to right: Howard Spindler, American-Standard public relations vice president; Benson Ford, and William C. Ford, president of The Henry Ford Museum's board, discuss the American Radiator & Standard Sanitary Corp. display. Twenty leading American companies are cooperating with the Museum in sponsoring the exhibit which will be shown in all cities over 100,000 during the next three years.*

What you should know about the American Society for Testing Materials

brief reference to the aims and functions of ASTM, with specific reference to the work of Committee C-22 on porcelain enamels

THERE are probably few engineers who do not now know the significance of ASTM and its activities, but *finish* editors feel there may be numerous executives in the top management bracket who have not made it their job to become as well acquainted with the four-letter organization and the possible affect of its work on their respective operations.

The name itself may be misleading to some, for the American Society for Testing Materials does no testing in the literal sense. You can't send anything to ASTM to be tested. These problems go into privately operated or commercial laboratories. The work of ASTM is concerned specifically with the field of engineering materials and for over fifty years many of the company's leading engineers, technical executives, etc., have devoted tremendous effort in the organization to promoting the knowledge of materials of engineering, technical research, standard specifications, and testing methods.

Its purposes are achieved largely through the intensive activities of over 900 technical committees which are responsible for the development of standard specifications and tests and for keeping them up to date. These groups also sponsor and carry out research work. The Society's work is advanced by the presentation and subsequent publication of technical data in the form of papers, reports and discussions.

ASTM standards

Every ASTM standard is evolved and sponsored by a committee of specialists in that particular field of activity. The membership of these committees is divided about equally among persons identified with consumer interest, producer interests, and general interests (neutral). The Society in its standardization activities thus capitalizes upon the inherent diversity of interest between consumer and producer. The consumer group may be expected to stipulate requirements, and the producer group may be relied upon to detect items which are impracticable and costly from the standpoint of manufacture. The general-interest group may be said to hold a balance of power and represents the judicial or disinterested contingent.

Since the adoption of a standard requires virtually a unanimous committee approval, there is little reason to doubt that an ASTM standard or tentative represents the best that was known on the subject at the time of its adoption. Moreover, no standard is permanent. As the available knowledge or state of the industry changes, standards are revised, replaced, or abandoned. In an actively-developing field, standards may undergo modification each year or two; other standards may continue for years without alteration.

Committee operation

In its over fifty years of standards development, the ASTM has issued over 1600 specifications and tests, aggregating some 8,000 pages. These cover practically every field of engineering.

Mr. Hervey S. Vassar, president of the Society in 1936, made the statement, "In the field of physical science, our individual usefulness is usually directly proportional to our ability to control preconceived opinions, which are so often mere prejudices with little if any foundation in reason or fact."

In ASTM committee work, this thought is studiously applied. In the free interchange of opinion and criticism which characterizes committee activity, pre-conceived notions quickly go out the window and the practice of proving methods and specifications prior to their issuance further assures their adequacy.

ASTM's time-tested policy is one of rigorous examination, debate and ballot in technically qualified committees and before the Society.

Committee C-22 on Porcelain Enamels has been active for sometime on standard test methods covering properties of porcelain enamels and a glossary of terms.

Tests and problems that have been studied include:

Method for sieve analysis of wet milled and dry milled porcelain enamels,

Test method for resistance of porcelain enameled utensils to boiling acid,

Test method for acid resistance of porcelain enamels (at room temperatures),

Test method for impact resistance,

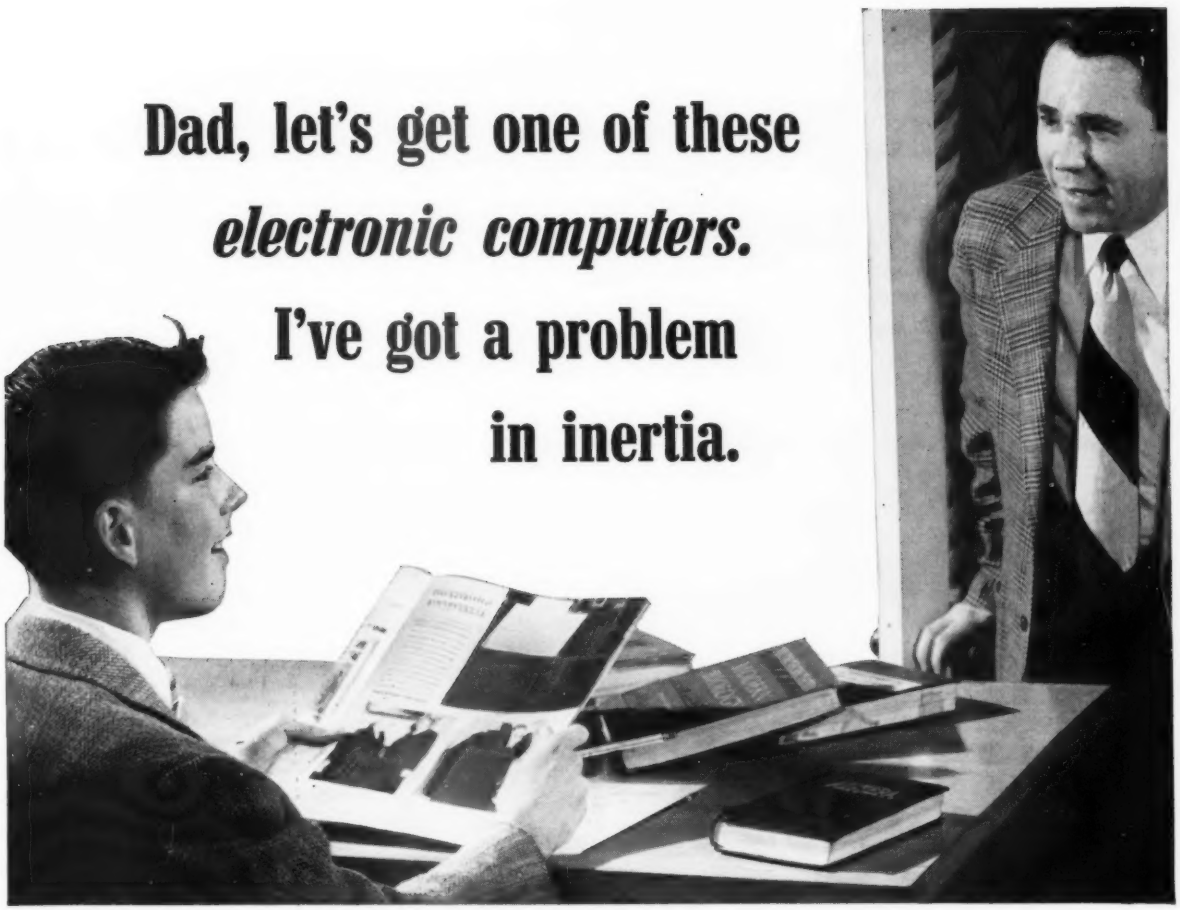
Determination of reflectance,

Resistance to abrasion,

Tests for warping, etc.

The Committee which was officially formed in 1949, and on which more complete information was published in the May, 1951, issue of *finish*, is headed by W. N. Harrison, chairman, National Bureau of Standards, and G. H. Spencer-Strong, secretary, Pemco Corporation, Baltimore.

Dad, let's get one of these *electronic computers.* I've got a problem in inertia.



THAT's the kind of acceptance a manufacturer dreams about. But there's a hitch in this electronic dreamboat. The gadget costs around $8,000! Although Dad may be a doting parent, he isn't likely to gratify Junior's whim. Yet he and Junior and millions like them are exposed to advertisements which offer costly, specialized equipment without home utility.

The Business Press is the place for such advertisements. That's where you reach—at moderate cost—pre-determined prospects. There are business magazines for every advertiser, edited for special-interest audiences . . . readers who are ready to be told—and sold. Ask your agency for recommendations about the right business magazines to reach your logical markets.

If you sell the home appliance and fabricated metal products industries, FINISH is your DIRECT entree to all key personnel.

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Stove meeting

→ *from Page 48*

T. H. Cline, chief engineer, Newark Stove Company, addressed the Electric Range Section on the same subject.

In designing a product, the engineer must be conscious of sales appeal, function, costs, problems of service and selling in the field. The engineering department must give the designer all limitations on parts. The engineer needs the full cooperation of production personnel, and must style with an eye toward economy in tooling.

In addition, said Cline, the engineering department can improve products by following up the movement of replacement parts to see which appliance parts are needing replacement the most. He concluded that sales features must be proven before the products are put out into the field.

Some of guests attending dinner honoring Merritt Van Valkenburgh.

The Oil Division was also treated to an address on the engineer's role in increasing the sales appeal of appliances. This talk was presented by A. T. Atwill, executive vice president, Quaker Manufacturing Company, a division of Florence Stove Company.

"Let us approach the problem by finding some facts on the subject of oil heater sales," said Atwill. "On this particular subject we have lots of help. Marketing experts are at hand to give us the facts and figures on how many oil heaters are going to be sold, and where, during the next year. These facts on sales potential place two specific responsibilities upon the engineers. . . . The first job is to produce a product which can get our companies their just percentage of that known quantity of sales. And then it is the engineer's job to see that his own company has a product that can get more than its usual percentage of the total sales volume."

Van Valkenburgh honored

Eighty-three friends of Merritt Van Valkenburgh attended a special dinner given in his honor Monday evening at the Netherland Plaza.

The occasion was a spontaneous affair, and it turned out to be like a meeting of a "mutual admiration society" because friends of Van's from throughout the industry attended the dinner. His 20 years with M. H. Rhodes Co., as vice president in charge of research and development, brought him in contact with many leading stove manufacturers.

Van Valkenburgh has just completed a year of special development at the company's Hartford, Conn., plant, and is now back on the road to continue his activities in doing field engineering with Rhodes' clientele.

Gift presentations were made to the honor guest by Mark Rhodes, Jr., vice president of the company, and by Tom Donnelly, of Pittsburgh, and Jesse Zuckerman, of Chicago.

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Testing coatings . . .

→ *from Page 26*

most remote from the enamel. The positive charge on the bare steel surface can be confirmed by the use of an electroscope.

The electrical charges existing within the enamel layer itself, being less mobile than those in the metal, probably reorient themselves but do not migrate.

At the site of a crack in the enamel layer, the resistance to flow of electrons through the enamel is impaired and some leakage from the metal to the powder occurs. This, in turn, attracts more powder particles and results in a sharply defined build-up of the powder over the crack.

The electrostatic voltages attained by this triboelectric phenomenon are surprisingly high. The potential across the enamel layer may reach a value as great as 8000 to 10,000 volts under ideal humidity conditions.

It has been established that Statiflux will indicate cracks in enamel that are narrower than one quarter the wavelength of light, or 0.1 microns, and which are invisible to even the highest powered optical microscopes. It has *not* been established that all cracks revealed as Statiflux indications will lead to failures.

Because of its extreme sensitivity, this testing method will detect incipient cracks that do not extend through to the steel. Furthermore, one can readily visualize that the cracks so detected may be so narrow as to resist entry of potential corrodent.

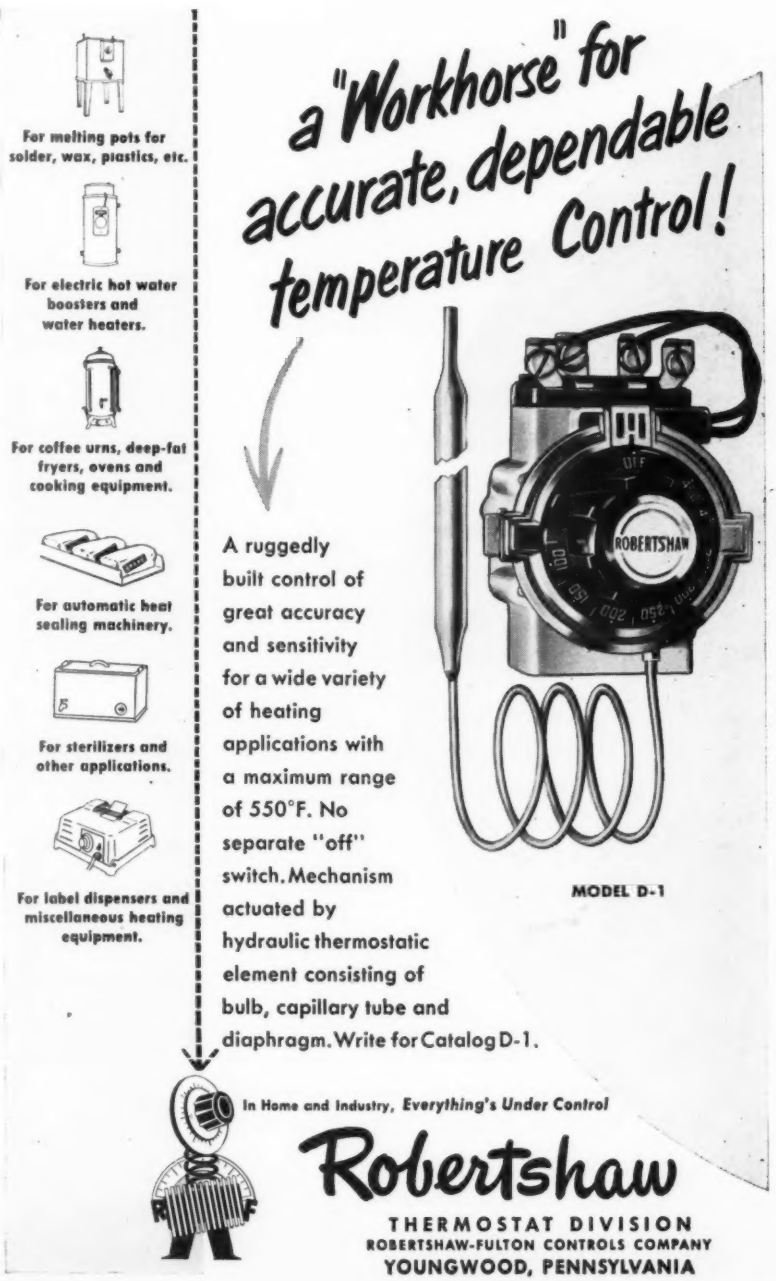
Due to the limited field use of electrostatic testing, the interpretation of its indications has not progressed to the degree where one can predict with certainty which cracks will lead to service failure and which will be innocuous. However, one should view such cracks with critical suspicion, for, if placed into service subject to cyclic thermal or mechanical stress, they may constitute nuclei for progressive failures.

The enamel layer exists normally in a state of high compression. Being a glass it has the theoretical characteristics of a liquid. There has been evidence presented to indicate that these two factors combine to heal some cracks upon extended time.

Because an electrostatic indication is a powder build-up over an enamel discontinuity, unidimensional flaws are much more conspicuous than those which are relatively non-dimensional. Thus cracks, which have the dimension of length, are readily apparent while pinholes, which have practically no dimension on the enamel surface, may easily be overlooked.

This testing method can make important contributions to design of enamelware. If it is found, for example, that a repetitive pattern of indications is occurring with great frequency upon a given enameled item, then certainly a change is indicated either in design or processing techniques. It may also yield knowledge of the limitations of certain types of packagings or transportation routines when recurrent failures are observed.

While it is felt that the foregoing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test descriptions cover the basic means in common use, there may be others of which the author has no knowledge.

Acknowledgments

The author acknowledges and appreciates permission by The Pfaudler Company to prepare and present this article.

For their comments contributing to its preparation, gratitude is expressed to many, among whom are A. V. Ziegler, of Electro-Technic Products; Henry M. Staats, of Magnaflux Corporation; William N. Noble, of Ferro Corporation; and James A. Schiefferle, of General Electric Company.

A. I. Andrews, "Chemical & Metallurgical Engineering," Volume 46, Number 7, 1939.

D. R. Goetchuis, "The Enamelist," Volume 21, Number 11, 1944.

Petersen, Jones and Allen, Journal of The American Ceramic Society, Volume 13, Number 7, 1948.

Henry N. Staats, Paper presented at the 53rd Annual Meeting of The American Ceramic Society, 1951.

Adapted for *finish* from a paper before the 1951 Porcelain Enamel Institute Forum for plant men.

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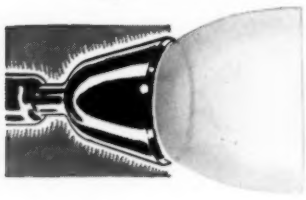

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Synthetic resins

→ *from Page 32*

draw paint from two containers and mix in the gun during the spraying process. It has been more difficult to control the light and heat yellowing in organosol films than in solution-type vinyl lacquers; therefore, the uses of only darker colors is favored. A serious objection has come from the fact that the original organosol films have had at best a semi-gloss or egg-shell luster, and often high gloss is desirable in production finishes.

At least on a laboratory scale, there is promise that many of these objections can be eliminated. If this is accomplished, vinyl coatings for industrial finishes might be produced which have a resistance to solvents and chemicals at least equal to the best of the curing types of resins, and which, at the same time, possess a degree of flexibility and abrasion resistance that can hardly be approached by the curing types of resins of comparable protective properties. It has been suggested that if such finishes become a reality, it may be possible to form and stamp sheet metal which has received an organosol coating shortly after the sheet was made and in this way the coating process would be more economical than finishing the many fabricated metal parts. Corrosion protection of the sheet before use would be valuable. At the present time, all of this is just dreaming as far as organosol finishes are concerned — but the dreams represent definite possibilities which are being pursued actively.

Resins such as polytetrafluoro ethylene (du Pont Teflon) and polychlorofluoro ethylene (Kellogg Kel-F) are also of the vinyl family, but there are presently only vague possibilities for mass-production finishes. These resins, like some other vinyls, are

applied as either latices or organosols, and have to be fused at very high temperatures, such as 600° F., for short periods of time in order to get a chemically-resistant film. Some work has also been done in applying such finishes by flame spraying of the resin powder. In either instance, very careful metal preparation is required in getting the metal clean and in getting the optimum degree of roughness of the surface. For effective protection, the films must be 5–10 times as thick as is required for ordinary paint systems. The film can contain no flaws and only considerable film thickness guarantees a minimum of flaws. When properly applied at adequate film thicknesses, these superior fluorinated polymers provide nearly the ultimate of protection for equipment designed to handle very corrosive chemicals such as strong acids and alkalies. However, the cost of the resin and the cost of applying is prohibitive for ordinary uses, and decorative properties are very poor. Teflon and related types of finishes will probably never become a volume item in mass production use. For the next five years at least, if organosols (or dispersion resin paints) become established, these will probably not use Teflon as much as some of the better resins resembling the conventional vinyl polymers (Vinylite, Geon, Tygon, Saran, etc.). Some researchers even voice hopes that polyethylene may find uses through the medium of latex, organosol or flame-spray application methods to properly prepared metal.

Parenthetically, we can note that the more we strive for use of more chemically-resistant plastics in coatings, the more acute becomes the problem of preparing the metal surface so that the coatings can adhere to the metal. This lag in our knowledge of adhesion and how it can be controlled by better surface preparation is a main stumbling block in the use of ever more chemically-resistant resins. The reasons that make a resin especially stable to chemical deterioration seem also to be the reasons why such coatings do not adhere well to metals. *It would seem that a great deal of the coatings research of the future will involve greater preoccupation with the properties of the metal surface* than with the chemistry of the coatings materials themselves. Our selection of possibly better resins for coatings is far in advance of our knowledge of how to engineer the painting operation, and how to solve this problem of surface preparation so that these superior resins stick to the metal well enough to give protection.

Acrylic resins

Several years ago, considerable publicity was given to the use of acrylic resins in coatings (acryloid, lucite, plexiglass). In their chemistry these resins resemble the now more popular vinyls except that the problems of adhesion, color retention and paint application are not as great. The higher cost of these resins, and the fact that the film properties of such can be duplicated or even sur-

Above: Corning Glass Broiler Plate—heat resistant, easy to clean.

Below: Corning EC Glass Panel replaces heating coils—provides the most even broiling ever known.

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Here are two sure-fire sales building ideas. "Broil on—*and broil with* glass" with Corning's famous Glass Broiler Plate and Corning's *new EC Glass Heating Panel.* Here's how they work.

The EC (electricity conductive) glass heating panel replaces heating broiler coils—and provides the most even broiling ever known. The glass panel itself is the heating element!

The mirror-smooth easy-to-clean broiler plate eliminates the drudgery that accompanies the scrubbing of ordinary broilers. Its smooth surface aids in retaining meat juices, prevents sticking, eliminates crisscross patterns. You can depend on its heat resistance because it's made of PYREX brand ware.

Take advantage of these brand new and sizzling sales building ideas!

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Right: Crystal-clear, smartly styled PYREX brand Oven Windows are available plain or assembled. *Extreme right:* Colorful Photolays in glass for handsomely designed trademarks, nameplates and clock faces.

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passed by some alkyd-melamine finishes has discouraged use of the acrylic types. There is no indication that the acrylic types will find very extensive use in the near future of production finishes. Such resins are excellent vehicles for many of our luminescent (day-glow) or phosphorescent colors which now have some use in advertising display materials; however, these are of comparatively minor importance in production finishing. Acrylic resins can sometimes be blended with other less expensive vinyl and synthetic rubber types of resins to overcome some of the formulation disadvantages of these other polymeric materials. Such finishes, however, should more properly be considered as variations of the lacquers based on the major polymer rather than as a new class of acrylic coatings.

Recently, unpigmented acryloid finishes have become rather popular as clear coatings to prevent the tarnishing of bright metals such as polished chromium and nickel. The better resistance to yellowing and the better protection provided against corrosion makes the acrylic polymers superior to the conventional nitrocellulose lacquers as finishes for bright metal. Air-drying finishes are good, but baked finishes are more adherent and give better protection. In either instance, very thin films (0.6 mil or less) are superior to thick films as far as adherence and metal protection are concerned.

Nylon

Some publicity on Nylon has given an impression which I do not believe was intended by the manufacturer, namely, that these resins have very superior chemical resistance and should provide the ultimate in protective coatings. This impression is incorrect. Nylon (or polyamides in general) are resins which are damaged quite easily by acids and alkalies, and they yellow quite badly on prolonged exposure to light or heat. Only one or two nylon-type resins have been developed which can be used in formulating coatings. Almost all such coatings have been used as lacquers on cloth or glass or otherwise wrapped electrical cable. The principal advantages seem to be a high degree of abrasion resistance and favorable electrical properties. Very few, if any, laboratories have made a serious effort to use polyamides for coatings in competition with traditional production finishes.

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What 20,000 women want in kitchens

→ *from Page 37*

ceramic tile, stainless steel, porcelain enamel and marble. As to counter colors, red won out over all others by a big margin, followed by green, yellow, blue, black.

For walls and floors, green and yellow were the favorites with every color in the rainbow somewhere on the list. The most popular kitchen, then, has green or yellow walls, a green linoleum floor, white cabinets

and equipment, and red counters. It is really an attractive room, nonetheless so when natural wood cabinets are substituted for all-white ones.

The trend in appliance preference

Appliances—And now at last, after giving you an over-all picture of the contestants and the kinds of kitchens they prefer, I am getting to those close to your hearts — appliances. Not so long ago, a pretty good kitchen contained . . . a range and a refrigerator . . . period. We find now that these pieces are just the beginning of the complete modern kitchen. In fact, one of the most frequently mentioned reasons for the enlarged kitchen is the homemaker's desire to have sufficient space for all the modern appliances. On the inventory lists of things wanted, electric refrigerators came first with the greatest number, 90%. Electric ranges—get that, *electric* ranges—came next, but since there are so many good ranges and refrigerators already in use, other less densely saturated appliances came right up at the top among those not now owned but wanted, namely —

1. kitchen ventilating fan, 49%
2. garbage disposer, 42%
3. dishwasher, 40%
4. freezer, 22%

Those of you directly concerned with the production and sale of electric ranges have full reason to throw out your collective chests and say, "See what we've done." Here we begin to realize how important the electric range has become in the minds of women when they are thinking of modern kitchens. The electric range is gaining in favor by leaps and bounds. It certainly doesn't tax the memory of most of us in this room to recall the days when gas ranges were preferred by a margin of 16 to 1, and only a relatively short time ago, 10 to 1.

Among the 20,000 women who completed their McCall's contest entry blanks, just short of 60% specified an electric range. Of those desiring a new range, 66% want it to be electric. The large percentage of women who expressed a desire to change from another fuel to electricity is sufficient to worry competition.

You may not have realized the tremendous power of the slogan — "Be modern—go electric." But I can tell you that in hundreds upon hundreds of cases, these contestants told us that since this was their ideal of the modern kitchen, it would, of course, be completely electric.

Color for ranges

Those of you who may have deliberated upon the advisability of introducing range models in color and didn't want to do so because of the many problems involved, can rest easy. 97.2% of these women specified their preference for a white range. Among the few who expressed a desire for color, yellow was the favorite, followed by green and red. Orange came up in the rear.

Designing the range of the future

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torial research have convinced us that there are a few trends that producers of electric ranges will find of interest. We believe the *2-oven range to be more practical than the deepwell cooker*. If the well-cooker is still included, it has become almost a *must* that it be a convertible unit which can be used for surface cooking also. It is our opinion, also, that *automatic timing controls could be removed from some models*, if necessary, if this would bring price down and yet give women the advantage of two ovens.

Neither automatic time clock nor deep-well cooker is of sufficient importance to influence brand selection, because they are available in some models of all top brands. The automatic clock is used rather infrequently by the great mass of women. Don't interpret this to mean that we have lost any of our enthusiasm for automatic timing. We haven't; but we do want to emphasize the importance of the value of the two-oven jobs.

We believe manufacturers would profit by having their demonstrators do more with baking methods and techniques. After passing through a period when women did less baking in the home, we find their interest increasing, and we are being asked more and more to provide articles with recipes and baking instructions. This is as gratifying to us as it is to you since we would like to have the women get full use of their ranges.

Home laundry thinking

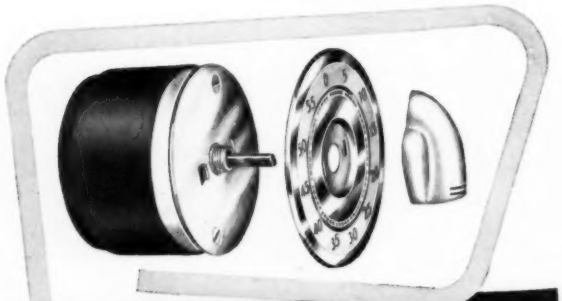
Laundries played a fairly important part in the contest. 80% of all contestants do all their laundry work at home. At the present time, 40% have a laundry in the basement, 25% incorporated within the kitchen, and 35% have their laundry in a separate room on the first floor. 37% would like to change the present location; 34% of the submitted plans called for combination kitchen-laundries.

In the plans submitted, a majority of the laundries were separated from the cooking area, but relatively few were completely closed off by wall or door. Whether such combinations of the kitchen-laundry are good practice, we aren't yet prepared to say with certainty. Many women who have this type of kitchen-laundry complain about the noise, laundry odors, moisture, and increased floor area that must be cleaned after each laundry session. Also, if the laundry is placed in a highly trafficked kitchen, confusion and difficulties of getting around are the inevitable result.

There was one fact that became evident as we studied the entries. The laundry designs made no particular contribution. For the most part, it seemed that they were included as an after-thought. It may be that more time and attention should be given to good planning practices for first floor laundries.

Naturally, automatic washers were in great demand. The automatic ironer, was wanted by 22%, and the same percentage indicated their desire for a dryer.

So here we have a brief outline of the kitchen-laundry story. But the fact remains that there is no such thing as a permanent plan for kitch-



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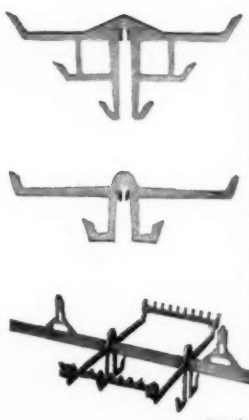

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ens—and we probably don't want one, since *the kitchen is constantly changing. It is an evolving room.*

The popular kitchen of 1930 was a higgeldy-piggeldy room in which nothing really fitted. There was an open sink, a refrigerator, a range set up on legs, and a center work table to run around. If there was an eating space, it was a cramped, built-in breakfast nook in the pantry leading to the dining-room. By 1940 this kitchen had evolved into a neat, clinical streamlined room with standard white cabinets, white, ivory or yellow walls, black counters and floors, and red accessories. Freezers, dishwashers, electric sinks were nonexistent, or rare. Eating in the kitchen was just beginning.

Today the popular kitchen, as I have pointed out, is larger and more colorful. It includes a laundry, a dishwasher, a waste disposer, a freezer, and more and more, an electric range. It has a sizable dining space and may be closely associated with the living area. It is an attractive room, the center of activity of the family, and effectively fits into today's informal living pattern.

The "six center" kitchen

Ten years ago there were really three centers of activity in the kitchen, all concerned with food — its preservation, preparation, and cooking. Now there are at least six centers — these three, plus a dining area, a laundry area, and a living area. The crowded breakfast nook has spread out so that the dining-living area is now twice as large as the food preparation center. In some instances there is also a freezer corner, with its own cabinets. It is our conviction that ten years from now the freezing corner will be as much a part of the standard kitchen as the range is today.

What other changes can we expect in the kitchen of 1960? Judging from this advance glimpse into these contest results, I predict that it will be even less a workshop than is today's glamour kitchen.

Adapted for *finish* by the author from an address before the Electric Range Division of the Institute of Cooking and Heating Appliance Manufacturers, Cincinnati, June 3, 1952.

Gas appliance manufacturers annual meeting

(Continued from Page 42)

"The steel picture, as it affects you, is improving. Copper is scarce, but a recent settlement with Chile has reopened the supply of Chilean copper which makes possible continued production of essential consumer goods, including many household appliances."

A dealer relations general session featured the final day of the GAMA meeting. Emphasizing "Retailing's Role in a Free Economy," Rowland Jones, Jr., president, American Retail Federation, called retailing "the most important economic activity in the country." He likened the retailer to the anchor man on the merchandising relay team. "He is the most important man on the team," Jones said, "because, until he reaches the finish

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line and delivers the goods, the race for the market is not won."

Dealer relations session spotlights sales training films

Julius Klein, president, Caloric Stove Co., and chairman of the "CP" (automatic range) manufacturers group, discussed a new nationwide, sales training program designed to upgrade gas range sales.

J. P. Hutchinson, sales manager, Lawson Manufacturing Co., and chairman of GAMA's gas water heater division, demonstrated the use of a sound-slide sales training film titled "The Golden Stream" which rounds up a variety of proven sales techniques employed by jobbers, wholesalers, utilities and large retailers in selling water heating equipment.

Earlier in the GAMA meeting, Carl Sorby had proposed adoption by the entire gas range industry of a broad-based promotional program under the general heading of "Operation Sales." Cited as the greatest promotional effort in the long history of the gas range industry, the program was approved unanimously by 17 manufacturers representing more than 60 per cent of the nation's gas range production.

Sorby points to 5,000,000 gas range sales per year

"This industrywide program had its inception at last year's GAMA meeting in Chicago when range manufacturers who were not members of the CP group were invited to join," Sorby said. "The number of non-CP companies who responded indicated the entire industry's readiness to campaign for the tremendous potential market for modern automatic gas ranges which we believe will amount ultimately to 5,000,000 sales a year. This goal can be achieved through the program just adopted by leaders of our industry."

Product division meetings

In addition to the domestic gas range division meeting, over which Sorby presided as chairman, most of the other product divisions of GAMA met at intervals throughout the convention.

These included: The gas clothes dryer division, R. B. Myers, Lovell Manufacturing Co., chairman; the gas house heating and air conditioning equipment division, Gordon Rieley, Lennox Furnace Co., chairman; the gas meter and regulator division, William A. Raub, E. F. Griffiths Co., chairman; the gas water heater division, J. P. Hutchinson, National Steel Construction Co., Inc. of Indiana, chairman; the industrial gas equipment division, D. A. Campbell, chairman; the gas furnace group, Lee W. Rasch, Security Manufacturing Co., chairman; the gas floor furnace group, Clarence Coleman, The Coleman Co., Inc., chairman; the CP manufacturers group, Julius Klein, chairman; the gas valve division, C. S. Stuckenholt, chairman; the controls and related accessories division, Paul F. Ness, Perfex Corp., chairman; the direct heating equipment division, F. Donald Hart, chairman; the gas incinerator division, J. G. Dierkes, Bowser, Inc. incinerator division, chairman; the gas conversion burner group, W. E. Davis, Roberts-Gordon Appliance Corp., chairman; the gas boiler group, H. B. Carbon, Bastian-Morley Co., Inc., chairman; the vented recessed heater group, J. R. Nason, chairman; and the unit heater group, David R. Webster, Reznor Mfg. Co., temporary chairman.

GAMA PRODUCT-DIVISION HEADS

(taking office October 1, 1952)

Controls and Related Accessories Division: Paul F. Neess, Perfex Corp., chairman; Frank Post, Robertshaw-Fulton Controls Co., vice chairman; C. D. Lyford, Minneapolis-Honeywell Regulator Co., executive committee member.

Direct Heating Equipment Division: Thomas D. Bromley, Peerless Manufacturing Co., Inc., chairman; F. Donald Hart, Temco, Inc., exec. committee member.

Domestic Gas Range Division: E. Carl Sorby, Geo. D. Roper Corporation, chairman; D. S. Sharp, The Tappan Stove Company, vice chairman; W. F. Muhlbach, Florence Stove Company, executive committee member.

Gas Clothes Dryer Division: Don H. Davidson, Whirlpool Corporation, chairman.

Gas Engine Compressor Division: A. M. Buxton, Cooper-Bessemer Corp., chairman.

Gas House Heating and Air Conditioning Equipment Division: Edward A. Norman, Jr., Norman Products Co., chairman; Harold C. Day, American Radiator and Standard Sanitary Corp., vice chairman; Gordon Rieley, Lennox Furnace Co., Inc., executive committee member.

Gas Boiler Group: L. N. Hunter, National Radiator Co., chairman; A. F. Westerfield, American Radiator and Standard Sanitary Corp., vice chairman; H. B. Carbon, Bastian-Morley Co., Inc., executive committee member.

Gas Conversion Burner Group: Arnold Muenzer, Columbia Burner Co., chairman; Harry Gurney, Surface Combustion Corp., vice chairman; W. E. Davis, Roberts-Gordon Appliance Corp., executive committee member.

Gas Furnace Group: George Hochstein, The Heil Company, chairman; Herbert G. Hayes, Armstrong Furnace Co., vice chairman; Lee W. Rasch, Security Manufacturing Co., executive committee member.

Gas Floor Furnace Group: R. M. Johnson, Payne Furnace Div., A.G.E., Inc., chairman; F. Donald Hart, Temco, Inc., vice chairman; Clarence Coleman, The Coleman Company, Inc., executive committee member.

Vented Recessed Heater Group: Clarence Coleman, The Coleman Company, Inc., chairman; E. S. Munson, Royal Heaters, Inc., vice chairman; J. A. Ryder, Stewart-Warner Corp., executive committee member.

Gas Incinerator Division: T. H. Landgraf, Autogas Co., chairman; W. M. Milbourne, Calcinator Div., Valley Welding and Boiler Co., vice chairman; J. G. Dierkes, Bowser, Inc., executive committee member.

Gas Meter & Regulator Division: W. G. Hamilton, American Meter Co., chairman; E. C. Hemes, Vulcan Rubber Products, Inc., vice chairman; Fair Whitworth, The Sprague Meter Co., executive committee member.

Gas Refrigerator Division: Louis Ruthenburg, Servel, Inc., chairman.

Gas Valve Division: D. E. DuPerow, Lincoln Brass Works, chairman; F. W. Schmidt, Roberts Brass Manufacturing Co., vice chairman; W. J. Wildern, Detroit Brass & Malleable Co., executive committee member.

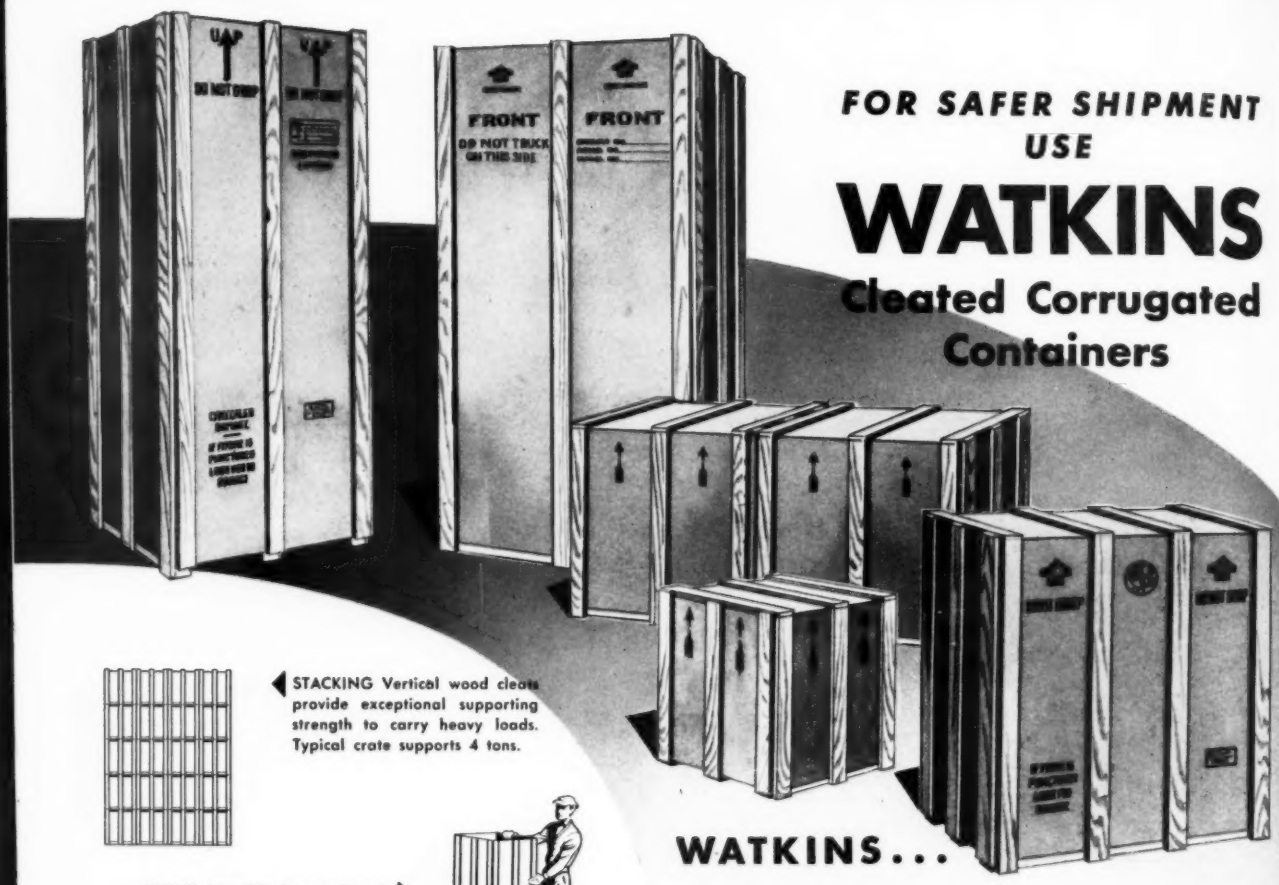
Gas Water Heater Division: J. P. Hutchinson, National Steel Construction Co., chairman; R. W. Simpson, John Wood Co., vice chairman; A. F. Cassidy, Rheem Manufacturing Co., executive committee member.

Hotel, Restaurant and Commercial Gas Equipment Division: F. A. Kaiser, Detroit-Michigan Stove Co., chairman; W. M. Smock, Vulcan-Hart Manufacturing Co., vice chairman; E. J. Horton, Robertshaw Thermostat Div., Robertshaw-Fulton Controls Co., executive committee member.

Industrial Gas Equipment Division: F. C. Schaefer, American Gas Furnace Co., chairman; J. H. Sands, Eclipse Fuel Engineering Co., vice chairman; D. A. Campbell, Eclipse Fuel Engineering Co., executive committee member.

General Marketing Committee: George M. Fraser, Surface Combustion Corp., chairman; A. F. Smith, A. O. Smith Corporation, vice chairman.

July · 1952
sate transit
FROM ASSEMBLY LINE TO FINAL CUSTOMER

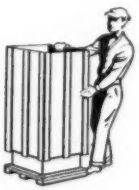


FOR SAFER SHIPMENT USE

WATKINS

Cleated Corrugated Containers

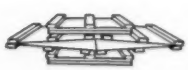
◀ **STACKING** Vertical wood cleats provide exceptional supporting strength to carry heavy loads. Typical crate supports 4 tons.



QUICK Assembly line packing is speeded up. Easy to handle. Complete protection for your product. ▶

◀ **STRONG** All wood cleats securely glued to tube-mat. Laboratory tests prove glued cleats resist weave and distortion better.

STORING Containers are delivered flat (only 3 sections) and closely nested to conserve storage space. ▶



WATKINS...

is the name to remember when choosing your product shipping containers. A Watkins Container provides complete protection. It is scientifically designed to give greater strength with less unit weight.

Your product will arrive at destination SAFE and CLEAN. It will carry safely, you can stack to any practical height, and resistance to "weaving" and shock is assured. No dust or dirt can reach your product and the smooth, staple-free interior protects fine product finishes.

Assembly time is reduced to a minimum. The 75% assembled containers save labor... save time... save expense.

The "Traveling Billboard" feature of Watkins Containers is an advertising feature to consider. Your advertising message can be printed in two colors on all four sides. Ship and advertise the "Watkins way".

THERE IS A **WATKINS CONTAINER** MADE NEAR YOU

These companies build WATKINS containers

CORNELL PAPERBOARD PRODUCTS CO.	1514 E. Thomas Ave., Milwaukee, Wis.
COZIER CONTAINER CORP.	446 East 131st Street, Cleveland, Ohio
CRATE-RITE MFG. CORP., Division of Pacific Ports Ind. Inc.	10901 Russet Street, Oakland, California
DURA-CRATES, INC.	940 East Michigan Street, Indianapolis, Indiana
GENERAL BOX CO., 1825 Miner St., Des Plaines, Illinois, and 16th and Maple Sts., Louisville, Kentucky	
HEMB & MARTIN MFG. CO.	Watseka, Illinois
ILLINOIS BOX & CRATE CO.	811 Center Street, Plainfield, Illinois
KIECKHEFER BOX & LUMBER CO.	1715 West Canal Street, Milwaukee, Wisconsin
LANE CONTAINER CORP.	10212 Denton Road, Dallas, Texas
LEWISBURG CONTAINER CO.	243 Singer Street, Lewisburg, Ohio
LOVE MFG., INC.	608 South Commerce Street, Wichita, Kansas

—an inquiry to any of these companies will get prompt attention—

The · WATKINS CONTAINER · Manufacturers

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and allied metal products field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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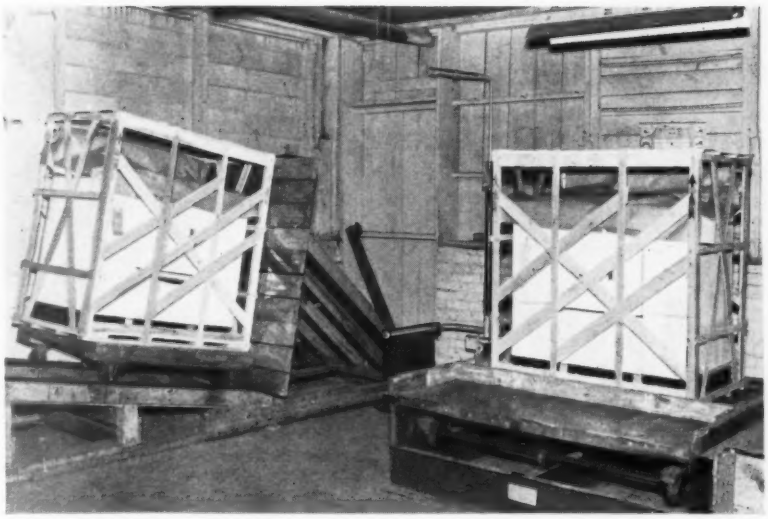
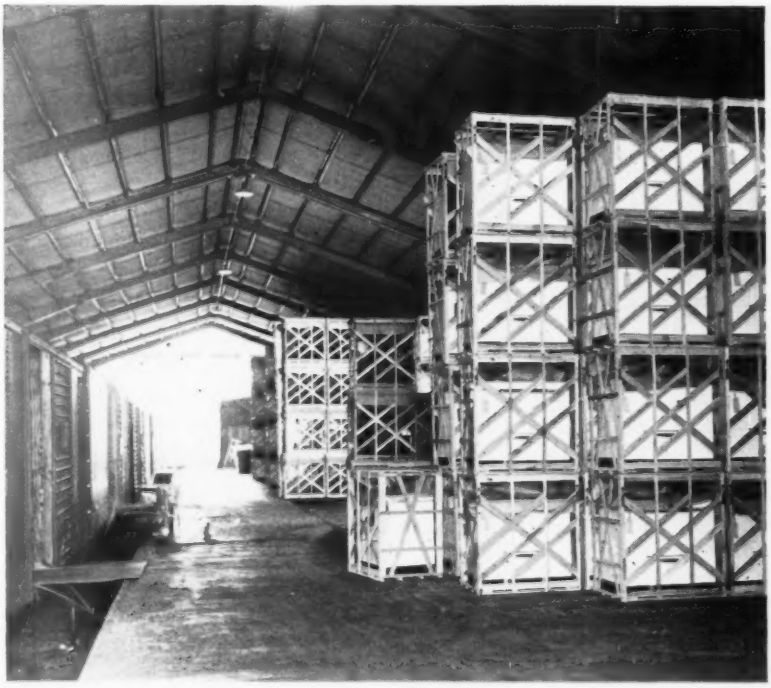
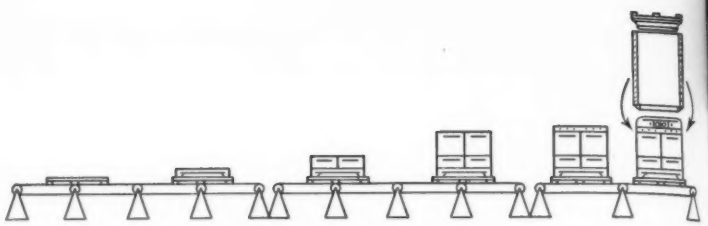


Safe Transit pre-shipment testing equipment — *shown in this corner of the Globe American shipping room — includes equipment for the vibration and incline impact tests (complete story on Page ST-7).*

Section of enclosed loading dock — *adjacent to storage shows Maytag Dutch Oven ranges, produced at the Globe American plant, stacked four high. This arrangement permits convenient loading of ranges from storage into cars.*



Automatic Packaging and Automatic Can-Making made History!



Now Add AUTOMATIC CRATING

—with the Atlas Automatic

When the product is completed on your line, the pre-fabricated Atlas Ply-Fold tube is placed over the product, which is already on its skid base—thereby covering all four sides in one operation. The top of the crate—also pre-fabricated—is then put in place. From this point on, the crating is completely automatic!

The product in its crate goes onto the conveyor belts of the Atlas Automatic Assembler. Passing through, it is stapled top and bottom on two sides. An automatic turntable then gives it a 90° turn—then through a second Assembler which staples the top and bottom of the other two sides. The finished product—completely crated—is now ready for delivery.

At first try—two men will easily do two crates a minute.

MANUFACTURING PLANTS

Richford, Vt.
Morrisville, Vt.
Greenville, Me.
Howland, Me.
Houlton, Me.
Patten, Me.
Plymouth, N. C.
Williamston, N. C.
Munising, Mich.
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Grayling, Mich.
Rhinelander, Wisc.

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Phillipsdale, R. I.
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CONTAINER

ATLAS

STATLER BUILDING,

TELEPHONE: HANCOCK 6-0016

ADS OUT

Product handling and pre-shipment testing at Globe American

by Clark Strayer • *PACKAGING & METHODS ENGINEER, GLOBE AMERICAN CORPORATION, KOKOMO, INDIANA*

Exclusive feature safe transit

We have been asked by the editors of *finish* to outline our methods of handling, packaging, and carloading for the Maytag Dutch Oven range which is produced in our plant. It is our pleasure to present this information for whatever it may be worth for other producers, as we have found as a result of our added attention to this division of our manufacturing operations, it has been possible to reduce our overall packaging and shipping costs, to greatly reduce complaints from distributors and dealers, and to minimize their requirements for instituting claims based on in-transit damage.

Shipping damage reports

One of the difficulties was in the fact that the time lag between shipping and the receipt of field damage reports was such that it was difficult to pin down the source of trouble.

Safe Transit testing instituted

Then came the National Safe Transit Program for pre-shipment testing which we promptly installed during the year 1950, with the immediate result that sources of trouble could be *pre-determined* and potential sources of loss, either in the product or in the crate, were rectified before any quantity of production or *packaged products* were released for shipment.

Carloading study

After we had licked our difficulties in relation to product design, and internal packing and crate design for the product, we continued our study in relation to materials handling and carloading practices.

The final result is that we are controlling packaging and shipping, and carloading practices from the time the *packaged product* leaves the production line until it is safely stowed in accordance with pre-determined carloading practices. In addition, it is common practice to run tests on carload shipments by installing a "ride recorder" in a test car so that we may have a history, on tape, of car handling in transit.

Routine procedure

Following complete assembly of Dutch Oven ranges, all interior packaging, taping, surface protection, and crating in open-type wooden crates is accomplished on a floor-type gravity roller-conveyor.

Fork lift trucks are used for trans-

Photo above shows a view down the final assembly line at Globe American showing the Maytag Dutch Oven ranges as produced at this plant.

Interior packaging and crating is handled on a floor-type gravity conveyor. Lift truck is used to transfer crated ranges to car or storage.

portation within the plant and for carloading. Where ranges are taken direct from the conveyor, they are handled individually; where they are loaded from warehouse stock, the fork lift truck load consists of two crated ranges. Crated ranges are stacked four high in the warehouse.

NST control tests—2 ranges per day

As has been indicated, our crated ranges have been pre-shipment tested and certified under the NST testing plan. As a control measure, we take two ranges per day at random from the crating line to check for production performance within the plant. These crated ranges are submitted to the standard NST pre-shipment test on the vibration machine and the Conbur incline-impact tester. Any failure to pass both tests satisfactorily would call for an immediate check on the plant procedures involved.

We feel that such a daily control test serves to prevent any deviation from normal plant production procedures, to assure standardization of our crating practice, and to avoid any slip-up whatsoever which might allow crated products to go in transit that are subnormal in any respect.

Fork lift truck handles crated ranges two high from the storage room, and one high from the production line.

Carloading procedure

As stated, our crated ranges are stowed in the car with a lift truck. They are loaded in three rows, two high, using the anchored load method with a truss-type gate and four horizontal straps tensioned and sealed on the side. One row of ranges is loaded solid against one side of the car, with the next two rows loaded solidly in turn. In the remaining space between the third row and the opposite car wall, a 2 x 4 floor cleat is used to

brace the load. These are nailed to the car floor.

Six-inch steel strap ties used

Each range crate is fastened to the adjacent crate with a 6" long section of steel strapping to prevent the rows from spreading. A single 6" section is used for all crates except the row with the space between it and the car wall, and in this instance two 6" straps are nailed to form an "X" to tie the four crated ranges at the top of the first tier and at the base of the second tier.

After the range crates are tied together in this manner, the bulkheads are installed and the four horizontal straps tensioned to form a 2-unit anchored load designed to minimize thrust of the center section of the load.

A single wood brace is then installed between the bulkheads at the floor line and the load is given final inspection for shipment.

Carload checking methods

As mentioned, it is common practice to install an eight-day 2-way ride recorder in test carloads to check on in-transit handling over various routes. This recorder registers time and shock results in vertical and longitudinal directions. Results are recorded on a chart which is wax coated 71' long x 5" wide and gives fine distinct records which cannot be erased.

The severity of the vertical vibration is governed by the type and the condition of car springs, load in car, by roadbed, and by speed.

The records made by the longitudinal portion of the recorder are used to locate end impact of freight cars which may be caused by switching, coupling, and bumping of cars.

In addition, we require that receivers return a report of the condition of the material upon receipt of the car or the truck. We furnish the necessary charts to the receivers, and we have found that cooperation in returning these reports to us has been excellent as it serves the interests of everyone concerned.

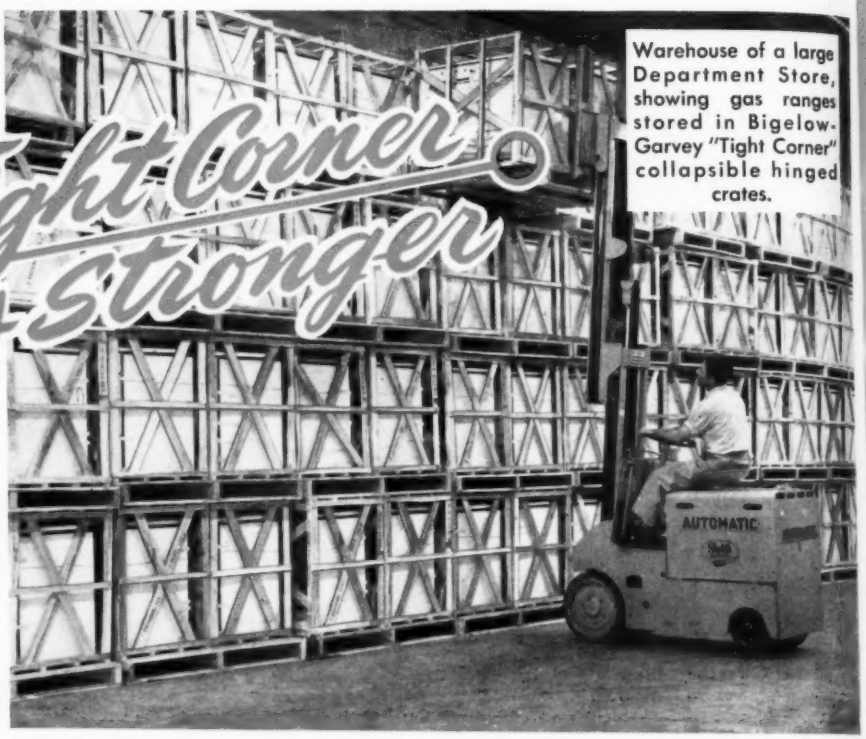
Safe Transit label used

We apply the National Safe Transit

This photo of a one-half car unit load shows the method of "tying" individual crates and tiers with 6" strips of steel banding.

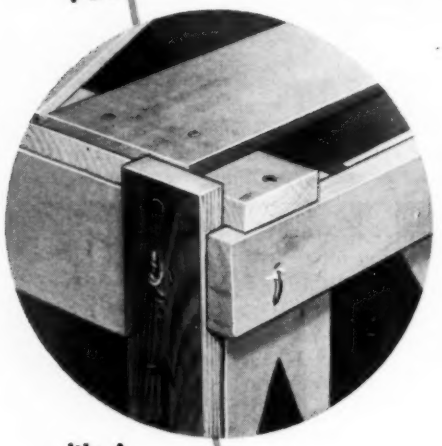
The author is shown holding the end of a chart from a two-way ride recording instrument used to check handling of carload shipments in transit. This photo, taken at the center of the carload, also clearly demonstrates the type of bulkhead and system of banding used for the two-unit anchored load employed at the Globe American plant.

The B G Tight Corner is Stronger



Warehouse of a large Department Store, showing gas ranges stored in Bigelow-Garvey "Tight Corner" collapsible hinged crates.

NOTE CORNER LOCKING FEATURE



It's A B G EXCLUSIVE

B-G Tight Corner Collapsible Hinge gives all Bigelow-Garvey Crates and Pallet Boxes that extra strength and rigidity to withstand normal handling and transit hazards.

B-G Containers are pre-tested and meet national safe-transit specifications.

B-G Tight Corner Hinged Crates and Boxes are engineered to your particular requirements and give extra assurance of the safe delivery of your product.

B-G Containers are engineered for strength and lightness. They come 65% assembled. Nail holes are pre-drilled for saving time in the assembly of the three component parts—top, bottom, and collapsible side walls.

B-G Tight Corner Collapsible Hinged Containers and Pallet Boxes are Profit Items for you in your shipping and handling program, when you consider the safety of your product, the time saved and the steadily rising labor costs.

Whether for defense or civilian products, let Bigelow-Garvey's 30 years of packaging engineering experience be the solution of your storing, shipping, and materials handling problems.

Tight Corner Hinge Crate

Wooden Pallets

Model A Pallet Boxes

Model B Pallet Boxes

Model C Pallet Boxes

Kraft Crate

Wooden Boxes

Six Section Panel Crates

MILLS: ARKANSAS GEORGIA WISCONSIN MINNESOTA ILLINOIS

always check B G

Write for complete details and prices to...

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General Office and Laboratory

320 W. HURON STREET • CHICAGO 10, ILLINOIS

Custom Protection – prevents shipping damage as no other packaging method known!

How often do *your* products arrive at their destinations scratched, cut or damaged in any way? Once a year – once a month – or oftener? If you had a single instance of damage in transit last year, it may be time to change to *custom protection* with Kimberly-Clark Interior Packaging – KIMPAK*. Companies like the Speed-Queen Corporation who revised and streamlined their packaging operations have found that nothing else protects so efficiently, so economically.

KIMPAK is soft, grit-free, easy to apply as wrapping paper. It will absorb up to 16 times its own weight in moisture within 30 seconds – protect against shock, scratching, pressmarking, vibration. KIMPAK is feather-light, yet gives more protection than most materials of far greater weight and density. Many concerns have found this an important factor in reducing the size and weight of their packages, due to recent postal rate increases.

Regardless of the product you manufacture, KIMPAK – in its many specifications – can be "tailored" to fit your particular needs. Today – investigate *custom protection* with KIMPAK. For complete information, write to Dept. K-7, Kimberly-Clark Corporation, Neenah, Wisconsin.

KIMPAK® INTERIOR PACKAGING

*® M. REG. U. S. & FOREIGN COUNTRIES

A Product of **Kimberly-Clark**

label to the exterior of all range crates, and we have found that it has attracted the attention of the carriers, encouraged careful handling, and that it has tended to assure the receivers that our company is doing its utmost to deliver the finished ranges safely.

Damage reports prove worth of pre-shipment testing

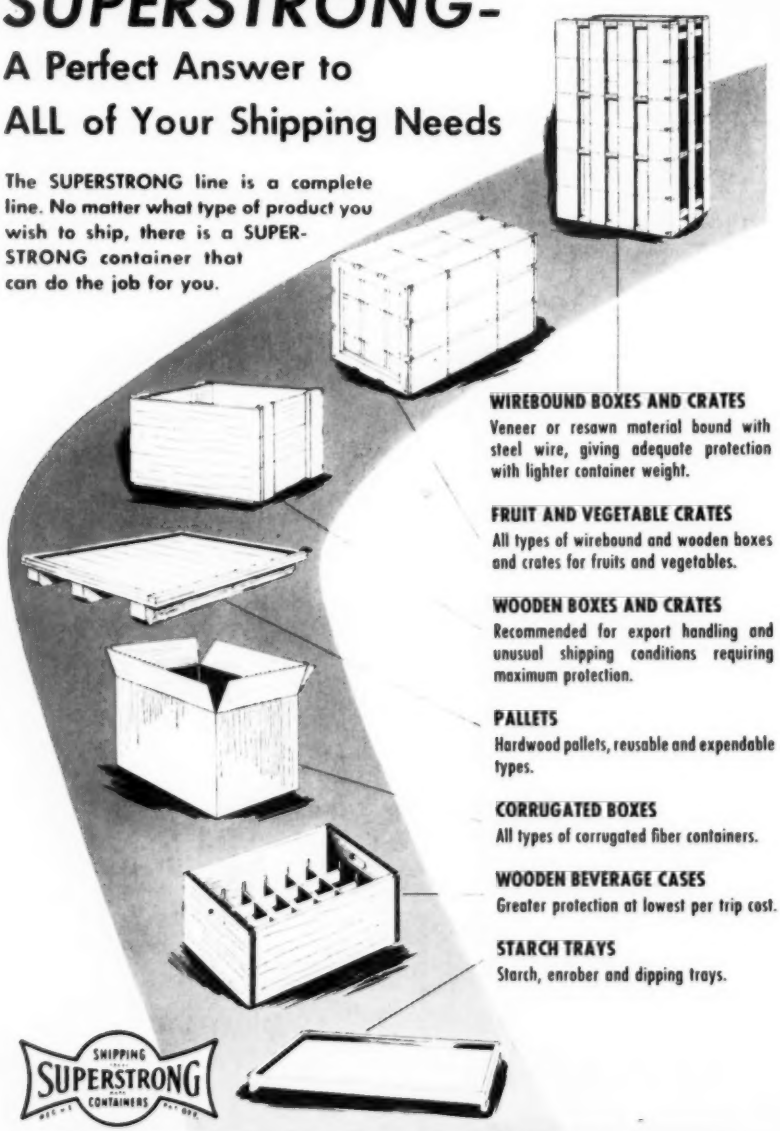
The proof of the pudding is in the eating, and our damage reports prove beyond any question of a doubt that the extra attention given to assembly, packaging, in-plant handling, and carloading methods has paid rich dividends through a reduction in damaged finished products. Our damage results during the period January 1, through March 30, 1952, were reduced to 1-1/10 per cent.

Our management is pleased with the results indicated by statistical comparisons, and we have had a very good reaction from those on the receiving end who most normally handle the "grief" in connection with in-transit damage.

SUPERSTRONG-

A Perfect Answer to ALL of Your Shipping Needs

The SUPERSTRONG line is a complete line. No matter what type of product you wish to ship, there is a SUPERSTRONG container that can do the job for you.



WIREBOUND BOXES AND CRATES
Veneer or resawn material bound with steel wire, giving adequate protection with lighter container weight.

FRUIT AND VEGETABLE CRATES
All types of wirebound and wooden boxes and crates for fruits and vegetables.

WOODEN BOXES AND CRATES
Recommended for export handling and unusual shipping conditions requiring maximum protection.

PALLETS
Hardwood pallets, reusable and expendable types.

CORRUGATED BOXES
All types of corrugated fiber containers.

WOODEN BEVERAGE CASES
Greater protection at lowest per trip cost.

STARCH TRAYS
Starch, enrober and dipping trays.

SHIPPING SUPERSTRONG CONTAINERS

RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

MENGEL DIVISION CERTIFIED AS SAFE TRANSIT LABORATORY

The corrugated box division of The Mengel Company, 1111 Zane Street, Louisville, Kentucky, has been certified by the National Safe Transit Committee as the 19th NST-certified laboratory.

MATERIALS HANDLING INDUSTRIES SUMMER MEETING, JUNE 29-JULY 2

A materials handling industries summer meeting will be held at the Grand Hotel, Mackinac Island, Michigan, June 29 through July 2.

This cooperative affair is sponsored by the following industry groups: The Material Handling Institute, Inc., the Caster and Floor Truck Manufacturers Association, the Conveyor Equipment Manufacturers Association, and the Industrial Truck Association.

I-C MAGAZINE CITES WORK OF SAFE TRANSIT COMMITTEE

In an article entitled "*Half a Thousand Dollars Spent for Junk*," the *Illinois Central Magazine* takes note of loss and damage claims during 1951. The article points out that the reduction of in-transit loss is dependent upon the individual initiative of each worker who has anything to do with freight transport.

Emphasizing that "teamwork can solve problems," it goes on to cite the work of the National Safe Transit Committee: "Along with the railroad and its workers, shippers are actively campaigning to improve handling of their own products. One prevention organization is the National Safe Transit Committee, in Washington, D. C., which is reaching into the heart of the shipping problems that face practically every product transported by every type of carrier. It is this dovetailed cooperation and effort of shipper, railroader and receiver that has resulted in a steady, but slow reduction in freight claims. A great deal remains to be done."

ADS OUT

Promoting better shipping at the local level

Traffic Club of Syracuse sets a pattern suitable for many other cities

OFFICIALS and employees in every phase of the transportation industry gathered in Syracuse, New York, May 19, for an exhibition featuring working demonstrations of modern shipping methods aimed at reduction in damage at shipping and receiving points, as well as in transit.

Sponsored by the Traffic Club of Syracuse, the "Better Shipping and Handling Exposition," as it was called, was attended by more than 2,000 people actually engaged in some part of the transportation industry. Attendance was by invitation and only those with vocational interest were on the guest list.

Exposition staged to focus attention on better shipping

Industry and business firms of the Upstate New York area, of which Syracuse is the hub, are wholeheartedly cooperating in a program of perpetual vigilance under the leadership of the Traffic Club of that city. The exposition was staged to focus national attention on this program.

Held in the recently remodeled New York Central freight house, the show featured a wide variety of exhibits demonstrating loading and unloading techniques, packaging and crating, handling, pre-transit testing methods, in fact, just about everything pertaining to materials movement via air, land or water.

Some of the exhibitors were:

Onondaga Pottery Company, box car loading of china in container packaging; San-Equip Company, carloading of heatilators and septic tanks; Solvay Process Division of Allied Chemical & Dye Corp., carload of miscellaneous products, detailing proper bracing; Carrier Corporation, special blocking in a gondola for the hull of an M-47 Army tank, also crated air conditioners in a Pacemaker trailer, and a Shake Tester used to pre-test the stability of crating on self-contained air conditioning and refrigeration equipment; Precision Castings Co., packaging and arrangement of various sizes of castings for safety in transit; Robert Gair Co., Inc., various methods of packing odd shaped and convex sheet glass in corrugated containers; D. L. & W. Railroad, photo and other illustrations of the steps taken by that company to reduce claims and loss in transit.

Above: View of one section of the exposition which was attended by more than 2000 persons actually engaged in transportation.

Easy Washing Machine Corporation, cooperative display to show how the National Safe Transit Committee's activities have helped that firm to reduce loss from damage in transit; Syracuse University, the part that institution's educational program plays in the coordination of technicians in the transportation and materials handling fields; Pitney Bowes, production line operations for handling parcel post and mail; Yale & Towne Mfg. Co., in conjunction with Lamson Corporation, a working exhibit of the coordinate operations of industrial trucks and conveyor lines into and out of over-the-road trucks.

Minnesota Mining, practical applications of adhesion taping for shipping containers; L. C. Smith & Corona Typewriter Co., modern methods of packing that product for shipment; Freuhoff Trailer Co., displaying new type sectional steel flooring to which standard dunnage can be secured by nails or drive screws and a refrigerated over-the-road trailer; New York Central Railroad, methods employed

James Muirhead, product engineer, Easy Washing Machine Corp., is shown in his company's booth at the "Better Shipping and Handling Exposition."

by its property protection department and claim division to develop new packaging and car-loading techniques; Flying Tigers, air shipments as the quickest and safest means of transit for small packages and perishables; Crouse-Hinds Company, effective packaging method for conduits, searchlights and other electrical products.

General Electric Company, Electronics Division, packaging and handling of television and radio units, also transmitters, at shipping point, in transit, and at point of receival; and International Business Machine Corporation, use of standard forms and Marchant calculators in the preparation of bills of lading and other shipping media.

Success of the Syracuse show was due in large measure to an aggressive general committee under the leadership of Chet Colyer, assistant traffic manager of Carrier Corporation. The Traffic Club, of which Harold Baker, traffic manager of L. C. Smith & Corona, is president, as sponsor, coordinated the planning, in which practically every industrial, commercial and financial firm in the Syracuse area took part.

A move to have a Better Shipping and Handling Exposition annually in Syracuse has been launched by the hundreds of persons who attended the initial exhibition. The idea of having the show in a freight terminal added materially to the success of the venture. It provided the facilities for demonstrations under actual working conditions.

However, a larger show could be staged, permitting attendance by thousands rather than hundreds of people, wherever there is a railroad siding and truck loading facilities. In Syracuse, such a facility can be obtained at the New York State Fair Grounds. In other localities similar setups could be used.

At opening ceremonies, left to right: C. A. Thornton, of reception committee and traffic manager of Crouse-Hinds; Marilyn Colyer, hostess; A. W. Haight, pres. of common council of City of Syracuse, and acting mayor; H. J. Baker, president, Syracuse Traffic Club, and traffic manager of Smith & Corona; C. Mattern, New York Central freight agent; C. H. Colyer, exposition general chairman, ass't traffic mgr. of Carrier Corp.

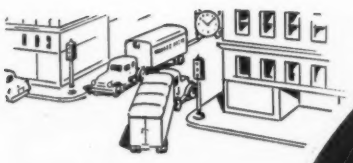
NAFFZIGER TO DIRECT AAR FREIGHT LOSS, DAMAGE SECTION

C. A. Naffziger, formerly freight claim agent and superintendent of stations and claim prevention of the Missouri Pacific Railroad, St. Louis, has been appointed as director of a newly created freight loss and damage section of the Association of American Railroads, according to William T. Faricy, AAR president.

Naffziger has had broad experience in claim prevention activities, and his appointment is said to be in keeping with recommendations made some time ago by the National Industrial League's Freight Claim and Claims Prevention Committee and the National Management Committee of the National Association of Regional Advisory Boards.

The newly created AAR Section, which will be located in Chicago, will center under one head all of the prevention activities formerly carried on by various groups of the AAR, Faricy said.

Both the Traffic League and Advisory Boards are said to have pledged their wholehearted support to Naffziger in a declaration of war on loss and damage to freight shipments.



CONTAINERS FOR AROUND THE CORNER DELIVERY OR..

...ACROSS THE NATION

KIECKHEFER MILWAUKEE

Producers of...

- Watkins Containers
- Wooden Boxes
- Box Shooks
- Crates
- Pallets
- Kieckhefer *Paletboxes*
- Industrial Lumber
- Special Design Cleated Fibre Containers

DELIVER SAFELY *without a scratch...*

...USE KIECKHEFER MILWAUKEE

The finest finished products can reach your customers exactly as they leave your plant —if both your product and your *container* are properly engineered to do the job.

Kieckhefer-Milwaukee offers you 50 years of practical experience in engineering and building the right container for the right product.

For many applications in the appliance and finished product field, we highly recommend the Kieckhefer-built Watkins type container — it's strong, it's light, it's easy to handle, and it keeps your product clean.

For other applications, from neon signs to industrial machinery, we will recommend the *type* of box or crate best suited to *your* needs.

Kieckhefer-Milwaukee products will deliver your products safely — economically — around the corner or across the nation.

And when you are a Kieckhefer customer, you can depend on the same kind of service and prompt delivery that built a reputation for meeting *all* delivery promise dates.

Kieckhefer-Milwaukee Containers will meet your Government Specifications

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SAFE TRANSIT NEWS

NATIONAL SAFE TRANSIT COMMITTEE

Denrike Building, 1010 Vermont Ave., N.W., Washington 5, D.C.

Majestic Manufacturing Co., St. Louis, Mo., reports that their claims for transit damages have been reduced over 50 per cent since their supplier redesigned their crate to pass the Safe Transit pre-shipment tests.

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Frequency of Testing - The recent questionnaire filled out by our certified companies definitely confirmed that those companies conducting tests on a high frequency basis are realizing the greatest reductions in damages and losses.

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Safe Transit Car Placards - We are glad to note that our certified companies are using ST car placards in increasing numbers. The quantity shipped to certified companies in May alone would identify as Safe Transit shipments the cargoes of 89 freight trains of 100 cars each.

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Application of NST Labels - The Committee has prepared mimeographed sheets giving complete information on NST labels and explaining methods most generally used in affixing them. Copies may be obtained by writing the Committee's Washington Headquarters.

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England and Australia Hear About Safe Transit - Excerpts from the FINISH reprint, "What Happens To Your Product in Transit" have appeared in the British publication, "Packaging Abstracts." As a result the Committee has been answering inquiries about the Safe Transit Program from York, England and Waterloo, Australia.

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R. F. Bisbee, General Chairman, NSTC, will serve on the Freight Claims and Claims Prevention Committee of the National Industrial Traffic League, an organization devoted to the promotion of sound economical transportation. Chairman Bisbee was appointed a member of the Committee by A. G. Anderson, President of the League.

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New Booklet - Under the direction of Chairman M. F. Weber, the Loading Research Division of the NST Committee is currently working on a booklet to be entitled, "Recommended Practices for Truck Loading." It is scheduled for release later in the year and should be helpful to manufacturers who ship extensively by truck.

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Leading Association Offers Support of NST Program - The Committee was pleased to receive last month a letter from Mr. G. P. Paine, Director of Public Relations, American Standards Association, offering the assistance and cooperation of this distinguished Association. Mr. Paine's letter reads in part:

> "It has been our feeling that the NST Program as it has broadened in scope is setting a national pattern which many manufacturing groups in addition to those now included, might be interested. Since a nationally coordinated standards program will probably be the foundation of the ultimate goal NST hopes to accomplish, we want you to be assured that the facilities of the American Standards Association are at your disposal at all times."

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"All manufacturing, engineering, and quality efforts are in vain if the product reaches its destination in a damaged condition."

New machine for automatic plywood crate assembly

RECENTLY announced is fully automatic production line equipment capable of sealing plywood crates automatically. Stitches are used, instead of nails, made from 15 or 16 gauge wire procured in 100# coils. In most cases 100# of wire will suffice for a week's operation of one of the heads of the machines. These staples, made directly from wire, are said to represent a saving of approximately 40% over the cost of nails. The staple itself is made in the machine with a preformed upset in the crown so that the staple may be removed with the claw of an ordinary hammer or screw driver, without any damage to the container. This greatly facilitates unpacking and especially repacking for reshipment after inspection, if it is so desired.

Rated speed — 1200 staples per minute

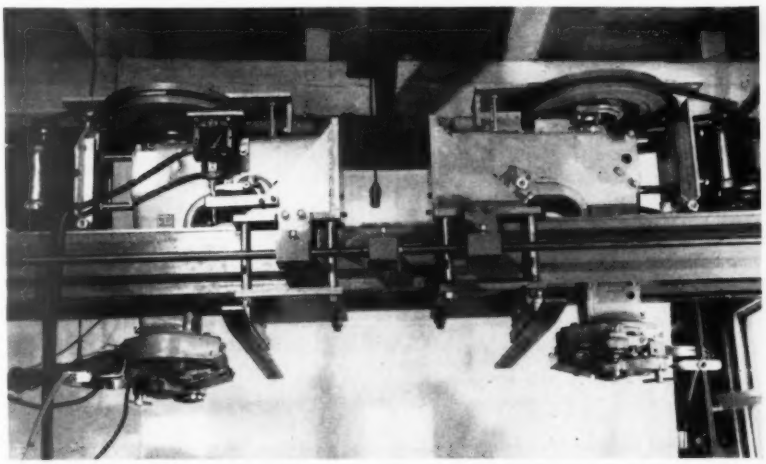
The machine is composed of four stapling heads capable of driving staples at the rate of 300 per head per minute. These four heads are placed on movable saddles, the bottom two on a fixed bed rail and the upper two on a movable rail permitting a wide range of sizes applicable to the machines.

The process of operation is as follows: The article to be packaged comes on the manufacturer's conveyor line attached to its skid at a place in front of the assembly machines. The tube and top is placed over the article being shipped.

From this point on, the process is entirely automatic and operates as follows: The conveyor of the first assembly machine takes the unclosed container from the manufacturer's line and passes it through the first machine controlled by a unit which is called the electric brain. The correct number of stitches are placed exactly in the right position at two edges of the top and two edges of the bottom. The electric brain permits the stitches to be driven only at the correct point and only when a crate is between the heads. Having thus completed one-half of the automatic crating operation, the conveyor delivers the crate to a turn-table on which it is rotated 90° and delivered to the second machine, which performs the same operation on the other four unstitched edges. At the end of this machine a perfectly closed container is ready for storage or shipment. Each staple is crowned so that it may be easily removed.

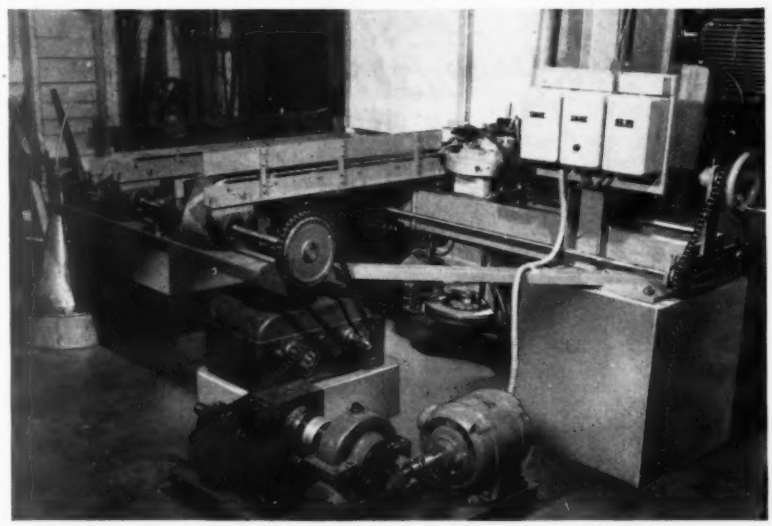
Two operating speeds for production line synchronization

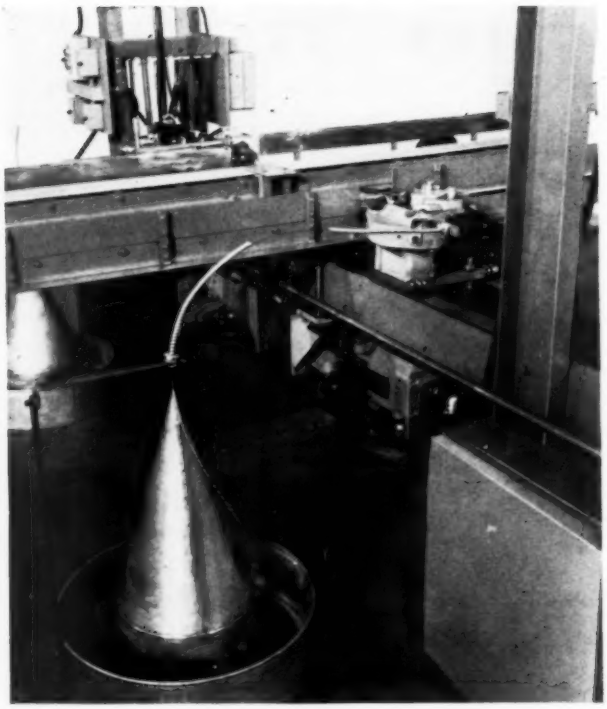
The machines are operated at two speeds. First the slow speed operates



Close-up view of two top stapling heads on automatic crate assembly equipment.

View of automatic assembling equipment for crates showing drive equipment.





This view of the automatic assembling equipment shows how staples are produced at the point of use from coiled wire.

each head at the rate of 30 stitches per minute. The high speed operates each head at the rate of 45 stitches per minute. The average case requiring six staples on an edge could then theoretically be produced at the rate of 240 units per hour or 360 units per hour on the high speed. Inasmuch as the capacity of the machines is so much greater than the average production line, it is recommended the low speed be used until production requirements exceed 180 finished units per hour.

The stitcher heads used have been in use over 15 years, and are standard in the automotive industry for stitching steel parts together. The electric controllers are all standard and the drive mechanisms are similar to those now in use on tube machines.

The crate, the machines upon which the crates are made, and the automatic assembling machines are the invention of R. A. Muller.

For more complete information, write on your company letterhead to *finish*.

SAFE TRANSIT COLOR FILM

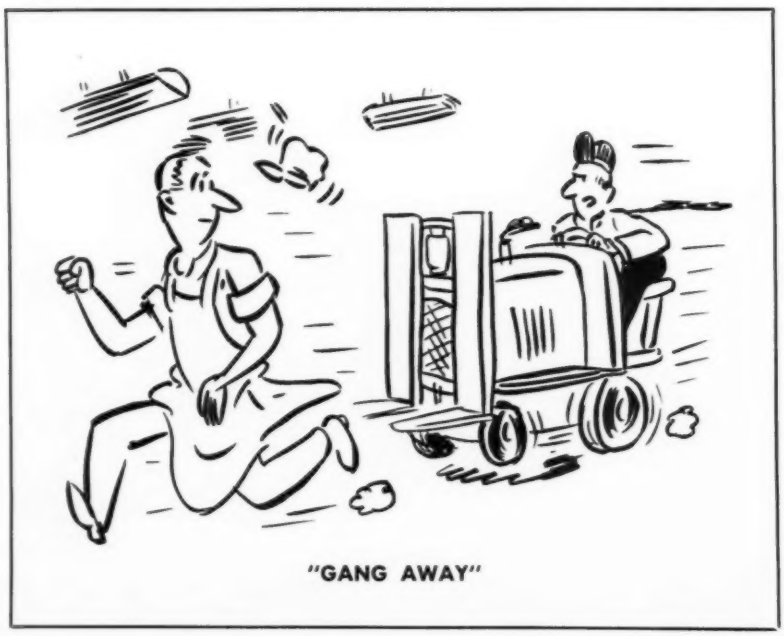
Now in the final stages of preparation is a full color, 16 mm film devoted to the National Safe Transit Program's test procedures and correlation data substantiating the testing program. The 30-minute film will be made available to all interested groups. The NST Committee feels that it will be a valuable aid in demonstrating the basic tests and acquainting organizations and carrier groups with the test procedures.

RCA MATERIALS HANDLING MAN ADDRESSES PHILADELPHIA ENGRS.

At a recent monthly meeting of the Philadelphia Regional Division of the Society of Industrial Packaging and Materials Handling Engineers, Norman Shikes, manager, materials handling division, Radio Corporation of America, was guest speaker.

Drawing on his 18 years experience in the field of materials handling, Shikes spoke on the subject of "Promotion of a Materials Handling Program."

It was pointed out that since industrial packaging and materials handling is one of the newest phases of industrial engineering, it must be approached like any new product or subject and promoted through advertising. In this case, however, the advertising must take place within one's company rather than externally.



"GANG AWAY"

NST MAIL BAG

A constructive force

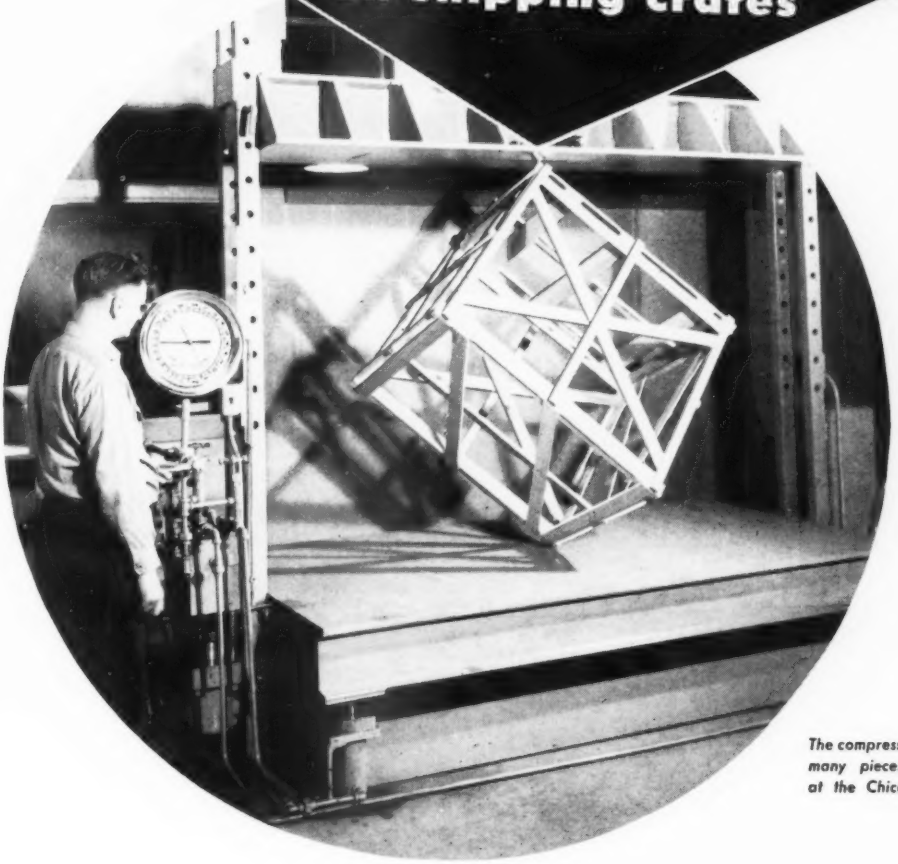
To NST Committee:

It is my privilege to tell you that we think the National Safe Transit Program has been a most constructive force in aiding the cause of scientific product protection and materials handling.

Many of our members are active participants in the program, and we sincerely believe that extension of the program's coverage to include other industries than those initially represented in the NST activity will be of considerable benefit to Commerce and Industry at large.

Stanley Price
President
Society of Industrial Packaging and Materials Handling Engineers

putting the pressure on shipping crates



The compression tester—one of the many pieces of test equipment at the Chicago Mill Laboratory.

The "Chicago Mill and Lumber Laboratory Tests" Pre-Prove Your Crates and Boxes

Wirebound,
Nailed or Hinge Corner
Cleated Plywood
Cleated Craveneer
Cleated Corrugated
Watkins Type Containers
Shop and Tote Boxes
Woodsteel Nesting Boxes

★

FOR DOMESTIC OR EXPORT
FOR PEACE OR DEFENSE

Chicago Mill crates or boxes are properly designed by competent engineers to deliver your product safely—and—they have been pre-proved in a completely equipped and staffed laboratory, *a National Safe Transit Certified Laboratory.*

Chicago Mill is the *only* single source for all the types of crates and boxes listed. Our engineers will recommend the type of crate or box best suited for *your product.*

Technical service, packing information and the facilities of our fine laboratory are available without obligation. Ask for information on this free, cooperative service.

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MATHESON NAMED PRESIDENT OF PORTABLE ELEVATOR

William A. Matheson has been named president and general manager of Portable Elevator Mfg. Co., Bloomington, Ill., manufacturers of refrigeration equipment and other products.

Matheson formerly was general manager and later president of Williams Oil-O-Matic, in Bloomington. Upon consolidation of the Eureka and Williams firms, he became executive vice president in charge of the Williams division.

FANNING NAMED PROD. MGR. OF MORRISON STEEL PRODUCTS

The promotion of Ray W. Fanning as production manager of Morrison Steel Products, Inc., Buffalo, manufacturers of domestic heating equipment, has been announced by Isadore Morrison, vice president in charge of operations.

HOMMEL TRANSFERS DAVIS

Ed Davis, sales representative, The O. Hommel Company, has been transferred to the West Coast as a sales representative in the Southern California territory.

PEI SHOP FORUM PROCEEDINGS AVAILABLE

All papers and discussions presented at the 13th annual Shop Practice Forum of the Porcelain Enamel Institute now are available in a single bound volume, the Institute announced. Copies may be obtained by writing to PEI at 1010 Vermont Avenue, NW, Washington 5, D.C. The charge is $5.00 per copy.